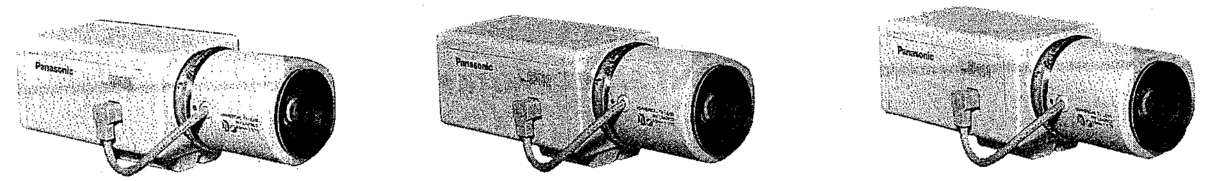
ORDER NO.AVS9408897C8

Service Manual

Colour CCTV Cameras

WV-CP410 / WV-CP412 / WV-CP414


WV-CP412

WV-CP414

SPECIFICATIONS

Pick-up Device:	752 (H) x 582 (V) pixels, Interline Transfer CCD	
Scanning Area:	4.9 (H) x 3.7 (V) mm (Equivalent to scanning area of 1/3" pick-up tube)	
Synchronization:	Internal, Line-locked or Multiplexed Vertical Drive (VD2) Selectable	
Scanning System:	2 : 1 interlace	
Scanning:	625 lines / 50 fields / 25 frames	
Horizontal:	15.625 KHz	
Vertical:	50.00 Hz	
Horizontal Resolution:	480 lines	
Video Output:	1.0 Vp-p PAL composite 75 ohms / BNC connector	
Signal-to-Noise Ratio:	50 dB (AGC OFF, weight ON)	
Electronic Light Control:	Equivalent to continuous variable shutter speed between 1/50 sec. and 1/15,600 sec.	
Minimum Illumination:	0.09 footcandle (0.9 lux) at F0.75 [Equivalent to 0.2 footcandle (2 lux) at F1.2 or 0.3 footcandle (3 lux) at F1.4]	
Gain Control:	Selectable AGC ON (+14 dB) or OFF	
White Balance:	Selectable ATW ON or OFF (AWC)	
Detail:	Selectable SHARP or SOFT	
Lens Mount:	Selectable C-mount or CS-mount	
ALC Lens:	Selectable DC or Video	
BLC :	Selectable Normal or Black Light Control	
Ambient Operating Temperature:	14°F - 122°F (-10°C -+50°C)	
Ambient Operating Humidity:	Less than 90%	
Power Source:	WV-CP410:	220 - 240V AC 50 Hz
	WV-CP412:	12V DC Selectable DC12V or Video
	WV-CP414:	24V AC 50 Hz
Power consumption:	WV-CP410:	4.7W
	WV-CP412:	0.3A
	WV-CP414:	3.5W
Dimensions (without lens):	2-5/8" (W) x 2-3/16" (H) x 4-3/16" (D) [67 (W) x 55 (H) x 123 (D) mm]	
Weights (without lens):	WV-CP410:	1.4 lbs. (640g)
	WV-CP412:	1.0 lbs. (460g)
	WV-CP414:	1.1 lbs. (480g)

Weights and dimensions indicated are approximate.
Specifications are subject to change without notice.

Panasonic

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION:
TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE.
REFER SERVICEING TO QUALIFIED SERVICE PERSONNEL.

This symbol warns the user that uninsuland voltage within the unit may have sufficient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any inside part of this unit.

This symbol alerts the user that impotant literature concerning the operation and maintenance of this has been included.
Therefore, it should be read carefully in order to avoid any problems.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are indicated by the " ⚠ " mark on the schematic diagram and the replacement parts list It is essential that these critical parts should be repleced with manufacture's specilied parts to prevent shock, fire, or other hazards
Do not modify the original design without permission of manufacture

CONTENTS

MAJOR OPERATING CONTROLS AND THEIR FUNCTIONS 1
EXPLANATION FOR IC 3
MODIFICATION PROCEDURE FOR E.V.R. ADJUSTMENT KIT 10
ADJUSTMENT PROCEDURE 12
CHIP COMPONENTS 27
LOCATION OF TEST POINTS AND ADJUSTING CONTROLS 29
APPEARANCE OF IC TRANSISTOR AND DIODE 30

BLOCK DIAGRAM

DRIVE BOARD 31
DIGITAL BOARD 32

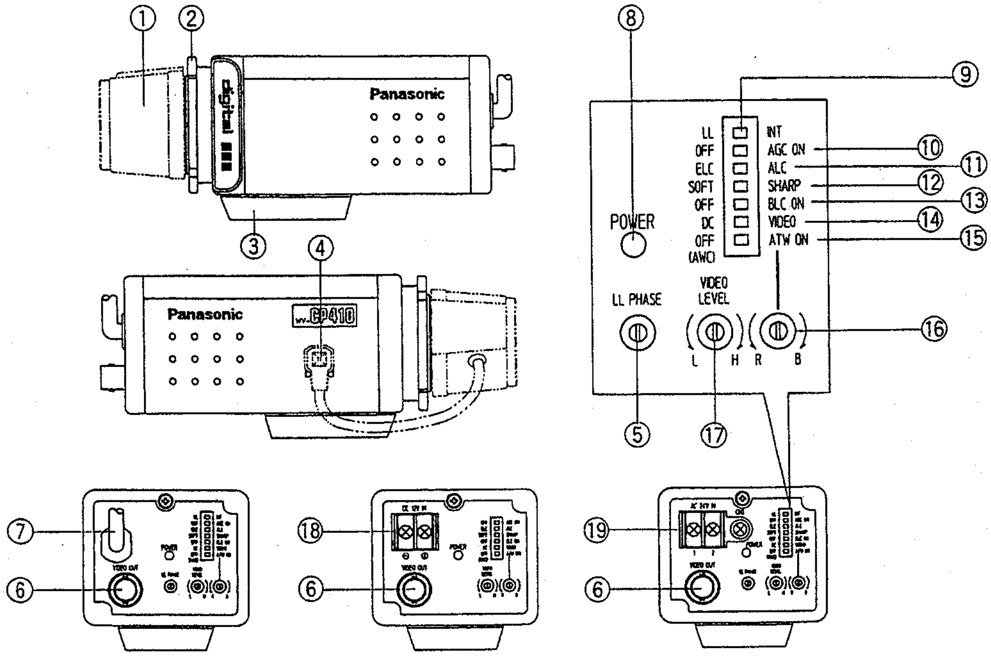
SCHEMATIC DIAGRAM

DRIVE BOARD 34
DIGITAL BOARD 35
POWER BOARD (WV-CP410) 37
POWER BOARD (WV-CP414) 38
VP BOARD (WV-CP412) 40
SENSOR, ALC BOARD 41
REAR BOARD (WV-CP410) 43
REAR BOARD (WV-CP412) 44
REAR BOARD (WV-CP414) 45

CONDUCTOR VIEW

DRIVE BOARD 33
DIGITAL BOARD 36
POWER BOARD (WV-CP410) 37
POWER BOARD (WV-CP414) 38
VP BOARD (WV-CP412) 39
SENSOR, ALC BOARD 42
REAR BOARD (WV-CP410) 43
REAR BOARD (WV-CP412) 44
REAR BOARD (WV-CP414) 45
WIRING DIAGRAM 46
EXPLODED VIEW 47
REPLACEMENT PARTS LIST 48

MAJOR OPERATING CONTROLS AND THEIR FUNCTIONS



WV-CP410 WV-CP412 WV-CP414

(1) Lens (Option)

(2) Flange-back Adjusting Ring
This ring is used to adjust the back focal length or picture focus by rotating this ring to clockwise for C-mount lens or counterclockwise for special C-mount (CS mount) lens.
Cautions:
1. Always set this ring to fully clockwise before mounting the lens.
2. Do not turn this ring too much to counterclockwise when the C-mount lens is mounted as this could damage the inner glass and CCD image sensor.

(3) Camera Mounting Screw Hole
This threaded hole (1/4" - 20) is used to mount the camera onto a mounting bracket or tripod.

(4) Auto Iris Lens Connector
This 4-pin connector supplies the power and DC control signal to the auto iris lens.

(5) Line-lock Phase Control (LL PHASE)
This is used to adjust the phase of the video output signal when the camera is used in the Line-lock mode.
The adjusting range is approx. 1 field.

(6) Video Output Connector (VIDEO OUT)
This connector is used to connect a coaxial cable to the VIDEO INPUT of the specified monitor. In case of the WV-CP412, this connector may be connected to the CAMERA INPUT of the camera drive unit. The camera drive unit supplies DC power and vertical drive pulses, and video output from the camera.

(7) AC Power Cord

(8) Power Indicator (POWER)

(9) Sync Selection Switch (LL/INT) (WV-CP410/ WV-CP414)
This switch is used to select the camera synchronization mode.
INT: The camera synchronization mode is set to internal 2 : 1 interlace.
LL: The camera synchronization mode is set to Line-lock.

(10) AGC ON/OFF Switch (AGC, ON/OFF)

This switch is used to select the gain of the video amplifier as follows.

ON: When the lens iris is fully opened under a low light condition, a clear picture is obtained by automatic increase of the gain.

OFF: A natural and low-noise picture is obtained under a low light condition.

(11) Electronic Light Control/Automatic Light Control Selection Switch (ELC / ALC)

This switch is used to select the light control function, depending on lens type, as follows.

ALC: Choose this position when using an auto iris lens.

ELC: Choose this position when using a fixed or manual iris lens.

(12) Detail level Selection Switch (SOFT/SHARP)

The detail/aperture level can be selected by this switch.

Set the switch to the desired position while observing the picture on the monitor.

Note: Usually set this switch to the SHARP position. When a Quad System is connected to this camera, set this switch to the SOFT position.

(13) Backlight Compensation On/Off Switch (BLC ON/OFF)

When backlight affects the picture, set this switch to the "BLC ON" position for a clear picture.

(14) Lens Selection Switch (VIDEO/DC)

This switch is used to select the type of auto iris control signal to be supplied to the lens from the Auto Iris Lens Connector.

DC: Choose this position when an auto iris lens that requires a DC control signal is mounted on the camera.

VIDEO: Choose this position when an auto iris lens that requires a video control signal is mounted in the camera.

Examples of this type of lens includes WV-LA8B, WV-LA16B, WV-LA25B and the WV-LA50B.

(15) Automatic Tracing White Balance Control ON/OFF Switch (ATW, ON/OFF)

The white balance setting function can be selected as follows:

ON: The white balance is automatically and continuously set by detecting the characteristic/color temperature of the light source through the lens and by controlling the gain of red and blue signals even if the characteristic/color temperature varies.

OFF: The white balance is automatically set once and saved by detecting the characteristic/color temperature of the light source through the lens and by controlling the gain of red and blue signals.

(16) ATW Control (ATW ON, R/B)

This control adjusts the level of red and blue color balance when the ATW ON/OFF Switch (15) is set to the ON position.

It is preset at the center position which usually provides accurate color reproduction.

(17) Video level Control (VIDEO LEVEL, L/H)

This control adjusts the level of auto iris control when the selection switch (11) is set to the ALC position, or the level of electronic light control when the selection switch (11) is set to the ELC position.

Note: Adjust this control after setting the AGC ON/OFF Switch (10) to the OFF position.

(18) DC 12V In Terminal (DC 12V IN)

This terminal accepts 12V DC power source (10.5V - 16V)

(19) AC 24V In Terminal (AC 24V IN)

This terminal accepts 24V AC power source (19.5V - 28V).

Be sure to connect the grounding lead to the GND terminal.

CIRCUIT DESCRIPTION

IC Description

1. Drive Board

1-1 IC1

This IC (AN2018S) is used for generating prevideo signal from CCD output signal component.
The pin identification of this IC is as follows.

Pin	Name	I/O	Description
1	N. C	-	Non Connection
2	BLK	I	Blanking pulse input terminal
3	IN	I	CCD output signal input terminal
4	VCC	I	Power supply terminal
5	SP2	I	Sample hold pulse input terminal 2
6	SP1	I	Sample hold pulse input terminal 1
7	GND	-	Ground terminal
8	OUT	O	CCD signal output terminal

1-2 IC2, IC13

IC2

This IC (YWTC74VC04F) is used for generating horizontal transfer pulses to drive CCD image sensor.

IC13

This IC (YWTC74VC04F) is used for generating sample hold pulses (SHP, SHD) and supplied to IC1.
The pin identification of this IC is as follows.

Pin	Name	I/O	Description
1	H1	I	Horizontal transfer pulse-1 input terminal
2	ØH1	O	Horizontal transfer pulse-1 output terminal
3	H2	I	Horizontal transfer pulse-2 input terminal
4	ØH2	O	Horizontal transfer pulse-2 output terminal
5	R	I	Reset pulse input terminal
6	ØR	O	Reset pulse output terminal
7	VSS	-	Ground terminal
8	N. C	-	Non connection
9	VSS	-	Ground terminal
10	N. C	-	Non connection
11	GND	-	Ground terminal
12	N. C	-	Non connection
13	HD	I	Horizontal drive pulse input terminal
14	VDD	I	Power supply terminal

1-3 IC3

This IC (YWC5023068E1) is used for controlling the lens iris and the pin identification of this IC is as follows.

Pin	Name	I/O	Description
1	GND	-	Ground Terminal
2	YIN	I	Luminance Signal Input Terminal
3	CP2	I	CP2 Input Terminal
4	CNT	I	Servo Control Input Terminal
5	SW	I	ALC Switch Input Terminal
6	DC	I	DC Voltage Input Terminal
7	REFO	O	Reference Output Terminal
8	9V	I	+9V Input Terminal
9	DAMP	I	Damper Control Input Terminal
10	5V	I	+5V Input Terminal
11	DRIVE	O	Drive Control Output Terminal
12	OP2-	I	OP2 Input Terminal
13	OP2O	O	OP2 Output Terminal
14	OP1-	I	OP1 Input Terminal
15	OP1O	O	OP1 Output Terminal
16	REF	I	Reference Input Terminal

1-4 IC4

This IC (YWCXD2404R) is a CCD drive pulse generator and the pin identification of this IC is as follows.

Pin	Name	I/O	Description
1	CLK	O	Clock Pulse Output Terminal
2	INVOUT	O	Inverter Output Terminal
3	INVIN	I	Inverter Input Terminal
4	CLR	I	Clear Input Terminal
5	HDSW	I	Horizontal Drive Switching Input Terminal
6	TEST1	I	Test Input Terminal
7	TEST2	I	Test Input Terminal
8	TEST3	I	Test Input Terminal
9	PBLK1	O	Preblanking Output Terminal
10	PBLK2	O	Preblanking Output Terminal
11	CPOB	O	OB Clamp Pulse Output Terminal
12	PCO	O	Phase Comparator Output Terminal
13	TEST4	I	Test Input Terminal
14	HCLR	O	ϕH Clear Pulse Output Terminal
15	DCP	O	Clamp Pulse Output Terminal for Digital Circuit
16	DCC	O	Clamp Pulse Output Terminal for Digital Circuit
17	HD	I	Horizontal Drive Pulse Input Terminal
18	VD	I	Vertical Drive Pulse Input Terminal
19	FH2	O	1/2 Fh Pulse Output Terminal
20	INHD	I	Internal Horizontal Drive Pulse Output Terminal
21	TEST5	I	Test Input Terminal
22	FIFR	I	Field/Frame Select Input Terminal
23	V1	O	ϕV1 Transfer Pulse Output Terminal
24	VSS	-	Ground
25	VDD	I	Power Supply Input Terminal
26	DCLK	I	Serial Clock Input Terminal
27	DATA	I	Serial Data Input Terminal
28	V2	O	ϕV2 Transfer Pulse Output Terminal
29	V3	O	ϕV3 Transfer Pulse Output Terminal
30	V4	O	ϕV4 Transfer Pulse Output Terminal
31	CH1	O	ϕV1 Charge Pulse Output Terminal
32	CH2	O	ϕV3 charge Pulse Output Terminal
33	SUB	O	Substrate Signal Output Terminal
34	VDD	I	Power Supply Input Terminal
35	H2	O	ϕH2 Transfer Pulse Output Terminal
36	H1	O	ϕH1 Transfer Pulse Output Terminal
37	CS	I	Chip Select Input Terminal for Serial Data
38	CCDSW	I	CCD Picture Element Select Input Terminal
39	R	O	ϕR Transfer Pulse Output Terminal
40	VSS	-	Ground
41	RWI	I	ϕR Width Control Input Terminal
42	RWO	O	ϕR Width Control Output Terminal
43	CPSW1	I	CPOB Switching Control Input Terminal
44	CPSW2	I	CPOB Switching Control Input Terminal
45	DS1	O	Sample Hold Pulse 1 Output Terminal
46	DS2	O	Sample Hold Pulse 2 Output Terminal
47	TEST6	I	Test Input Terminal
48	AECNT	I	Electronic Shutter Setting Input Terminal
49	SPO	O	SP1, 2 Pulse Phase Control Output Terminal
50	SPI	I	SP1, 2 Pulse Phase Control Input Terminal
51	VDRST	I	VD Reset Pulse Input Terminal L : Reset, H : Common
52	CSEL1	I	CLK2 Phase Select 1 Input Terminal
53	CSEL2	I	CLK2 Phase Select 2 Input Terminal
54	CLK2	O	Clock Pulse Output Terminal
55	PNSW	I	NTSC/PAL Switching Control Input Terminal (L : NTSC, H : PAL)
56	VDD	I	Power Supply Input Terminal
57	VSS	-	Ground
58	VMD1	I	Electronic Shutter Speed Mode 1 Input Terminal
59	VMD2	I	Electronic Shutter Speed Mode 2 Input Terminal
60	VMD3	I	Electronic Shutter Speed Mode 3 Input Terminal
61	SP1	O	Sample Hold Pulse 1 Output Terminal
62	SP2	O	Sample Hold Pulse 2 Output Terminal
63	XO	O	2 fck Oscillator Output Terminal
64	XI	I	2 fck Oscillator Input Terminal

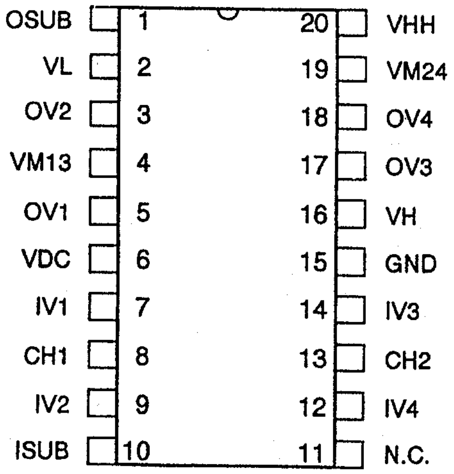
1-5 IC7

This IC (YWMB3775PFV) is a switching regulator which generates +9V DC and +5V DC.
Description of this IC is as follows.

Pin	Name	I/O	Description
1	CT	–	Timing capacitor connecting terminal.
2	RT	–	Timing resistor connecting terminal.
3	+IN1	I	Non-invereting input terminal for Error Amp. 1.
4	–IN1	I	Invereting input terminal for Error Amp. 1.
5	FB1	–	Feedback terminal for Error Amp. 1.
6	DTC1	I	DTC 1 signal input terminal.
7	OUT1	O	Control signal output terminal 1.
8	E/GND	–	Ground terminal.
9	Vcc	–	Power supply terminal.
10	OUT2	O	Control signal output terminal 2.
11	DTC2	I	DTC 2 signal input terminal.
12	FB2	–	Feedback terminal for Error Amp. 2.
13	–IN2	I	Invereting input terminal for Error Amp. 2.
14	+IN2	I	Non-invereting input terminal for Error Amp. 2.
15	SCP	–	Short Circuit Protection terminal.
16	VREF	O	Reference voltage output terminal.

1-6 IC10

This IC (MN3112SA) is used for generating vertical transfer pulses to drive CCD image sensor.
Description of this IC is as follows.



(TOP VIEW)

Pin	Name	I/O	Description
1	OSUB	O	Substrate signal output terminal.
2	VL	–	VL voltage supply terminal.
3	OV2	O	Vertical Pulse 2 output terminal.
4	VM13	I	VM13 voltage supply terminal.
5	OV1	O	Vertical Pulse 1 output terminal.
6	VDC	–	Power supply.
7	IV1	I	Vertical Pulse 1 input terminal.
8	CH1	I	CH1 signal input terminal.
9	IV2	I	Vertical Pulse 2 input terminal.
10	ISUB	I	Substrate signal input terminal.
11	N.C.	–	Non Connection.
12	IV4	I	Vertical Pulse 4 input terminal.
13	CH2	I	CH2 signal input terminal.
14	IV3	I	Vertical Pulse 3 input terminal.
15	GND	–	Ground terminal.
16	VH	–	VH voltage supply terminal.
17	OV3	O	Vertical Pulse 3 output terminal.
18	OV4	O	Vertical Pulse 4 output terminal.
19	VM24	–	VM24 voltage supply terminal.
20	VHH	–	VHH voltage supply terminal.

2.Digital Board

2-1 IC1

This IC (MN6576) is used for converting from analog signal to 9 bits digital data.
The pin identification is as follows.

Pin	Name	I/O	Description
1	AVSS	-	Ground Terminal for Analog Circuit
2	VRTS	I	VRTS Input Terminal
3	VRT	I	Top Reference Voltage Terminal
4	AVSS	-	Ground Terminal for Analog Circuit
5	AVDD	I	Power Supply Terminal for Analog Circuit
6	VRM	I	Middle Reference Voltage Terminal
7	AVDD	I	Power Supply Terminal for Analog Circuit
8	VIN	I	Signal Input Terminal
9	AVSS	-	Ground Terminal for Analog Circuit
10	VRB	I	Bottom Reference Voltage Terminal
11	VRBS	I	VRBS Input Terminal
12	AVSS	-	Ground Terminal for Analog Circuit
13	AVDD	I	Power Supply Terminal for Analog Circuit
14	AVDD	I	Power Supply Terminal for Analog Circuit
15	TEST	-	Test Terminal
16~19	D0~D3	O	Data Output Terminal
20	DVSS	-	Ground Terminal for Digital Circuit
21	DVDDL	I	Power Supply Terminal for Digital Circuit
22~26	D4~D8	O	Data Output Terminal
27	OVF	-	Not Used
28	DVSS	-	Ground Terminal for Digital Circuit
29	DVDD	I	Power Supply Terminal for Digital Circuit
30	CLK	I	Clock Pulse Input Terminal
31	NOE	I	Negative Output Enable Terminal
32	POWD	I	Clear Signal Input Terminal

2-2 IC3

This IC(MN67321) is a Digital Signal Processing, which generates luminance (Y) and chrominance (C) signal data (8 bits).
This is controlled by Microprocessor IC (IC8).
The pin identification of this IC is as follows.

Pin	Name	I/O	Description
1~9	AD8~AD0	I	Data Input Terminal
10	VDD1	I	Power Supply Terminal
11	VSS1	-	Ground Terminal
12	HCLR	I	Clear Signal Input Terminal
13	FH2	I	½FH Pulse Input Terminal
14	DCP	I	Digital Clamp Pulse Input Terminal
15	VD	I	Vertical Drive Pulse Input Terminal
16	HD	I	Horizontal Drive Pulse Input Terminal
17~18	NC	-	Not Used
19	NRE	I	Negative Read Enable Terminal
20	NWE	I	Negative Write Enable Terminal
21	NC	-	Not Used
22~29	DB0~DB7	I/O	Data Input /Output Terminal
30	VDD2	I	Power Supply Terminal
31	VSS2	-	Ground Terminal
32~39	ADR0~ADR7	I	Address Input Terminal
40	NC	-	Not Used
41	BEND	O	Border End Pulse Output Terminal
42~49	CO0~CO7	O	Chrominance Data Output Terminal
50	VDD3	I	Power Supply Terminal
51	VSS3	-	Ground Terminal
52	UVSEL	O	UV Select Output Terminal
53~60	YO0~YO7	O	Luminance Data Output Terminal
61	NC	-	Not Used
62	PWM	O	PWM Output Terminal
63	FLD	O	Field Pulse Output Terminal
64	CP2A	O	Clamp Pulse Output Terminal
65	CP2	I	Clamp Pulse Input Terminal
66	SYNCA	O	Sync Signal Output Terminal
67	SYNC	I	Sync Signal Input Terminal
68	BFA	O	BFA Output Terminal

69	BF	I	BF Input Terminal
70	VDD4	I	Power Supply Terminal
71	VSS4	-	Ground Terminal
72	CLK	I	Clock Pulse Input Terminal
73~76	TEST1~TEST4	I	Test Input Terminal
77	DSEL	I	DSEL Input Terminal
78	BLKA	O	Blanking Pulse Output Terminal
79	BLK	I	Blanking Pulse Input Terminal
80	NC	-	Not Used

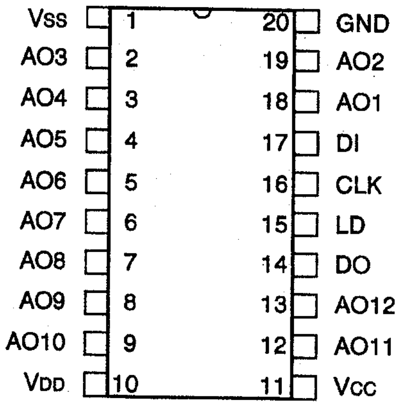
2-3 IC4

This IC (YWBR9021BFE1) is an EEPROM, which memories data supplied from Microprocessor IC (IC8).
The pin identification of this IC is as follows.

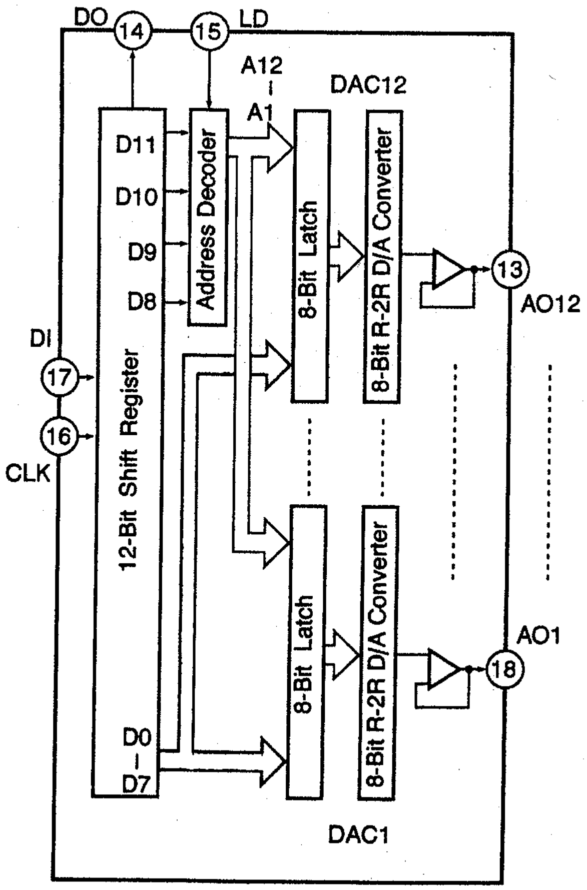
Pin	Name	I/O	Description
1	R/$\overline{\text{B}}$	O	Read / $\overline{\text{Busy}}$ Output Terminal
2	VCC	-	Power Supply Terminal
3	$\overline{\text{CS}}$	I	Chip Select Input Terminal
4	$\overline{\text{SK}}$	I	Serial Clock Input Terminal
5	DI	I	Serial Data Input Terminal
6	DO	O	Serial Data Output Terminal
7	GND	-	Ground Terminal
8	RS	I	Reset pulse Input Terminal

2-4 IC5

This IC (YWMB88346BEF) is used for converting from serial data signal to analog (12 ch) signal.
Description of this IC is as follows.


Vss 1
AO3 2
AO4 3
AO5 4
AO6 5
AO7 6
AO8 7
AO9 8
AO10 9
VDD 10
20 GND
19 AO2
18 AO1
17 DI
16 CLK
15 LD
14 DO
13 AO12
12 AO11
11 Vcc

(TOP VIEW)


DO
14
15
LD
A12
A1
DAC12
D11
D10
D9
D8
Address Decoder
8-Bit Latch
8-Bit R-2R D/A Converter
13
AO12
DI
17
16
CLK
12-Bit Shift Register
D0
D7
8-Bit Latch
8-Bit R-2R D/A Converter
AO1
18
DAC1

Pin	Name	I/O	Description
1	Vss	–	Ground terminal for D/A Converter circuit.
2	AO3	O	Analog Data 3 output terminal.
3	AO4	O	Analog Data 4 output terminal.
4	AO5	O	Analog Data 5 output terminal.
5	AO6	O	Analog Data 6 output terminal.
6	AO7	O	Analog Data 7 output terminal.
7	AO8	O	Analog Data 8 output terminal.
8	AO9	O	Analog Data 9 output terminal.
9	AO10	O	Analog Data 10 output terminal.
10	VDD	–	Power supply terminal for D/A Converter circuit.
11	Vcc	–	Power supply terminal for MCU Interface and Ope-Amp. circuits.
12	AO11	O	Analog Data 11 output terminal.
13	AO12	O	Analog Data 12 output terminal.
14	DO	O	MSB Data output terminal from 12-Bit Shift Register.
15	LD	I	Load signal input terminal. Data of 12-Bit Shift Register should be loaded to Decoder and D/A Output Registers when LD = H.
16	CLK	I	Shift Clock input terminal. Serial Data from DI terminal should be input to Decoder and 12-Bit Shift Register at falling edge of this signal.
17	DI	I	12-Bit Serial Data input terminal.
18	AO1	O	Analog Data 6 output terminal.
19	AO2	O	Analog Data 6 output terminal.
20	GND	–	Ground terminal for MCU Interface and Ope-Amp. circuits.

2-5 IC9

This IC (YWCF45107PGJ) contains sync generator and encoder circuits and pin identification of this IC is as follows.

Pin	Name	I/O	Description
1~8	DSPY7~ DSPY0	I	Luminance Data Input Terminal
9	UVSEL	I	UV Select Input Terminal
10	GND	-	Ground Terminal
11	VCC	I	Power Supply Terminal
12	CLR	I	Clear Input Terminal
13~20	DSPC7~ DSPC0	I	Chrominance Data Input Terminal
21	DSPBLK	I	Digital Blanking Pulse Input Terminal
22	BENDO	O	Border End Pulse Output Terminal
23~28	ADRS5~ ADRS0	I	Address Input Terminal
29~36	D7~D0	I/O	Data Input /Output Terminal
37	RE	I	Read Enable Input Terminal
38	WE	I	Write Enable Input Terminal
39~42	ADRS15~ ADRS12	I	Address Input Terminal
43	CSOE	O	Chip Select Output Terminal
44	CSOD	O	Chip Select Output Terminal
45	CSOC	O	Chip Select Output Terminal
46	CSIN	I	Chip Select Input Terminal
47~54	YOUT0~ YOUT7	O	Luminance Data Output Terminal
55	VCC	I	Power Supply Terminal
56~63	COUT0~ COUT7	O	Chrominance Data Output Terminal
64	SCB	I/O	B ch SC Input/Output Terminal
65	SCR	I/O	R ch SC Input/Output Terminal
66	SCOUT	O	SC Output Terminal
67	SCIN	I	SC Input Terminal
68	VCC	I	Power Supply Terminal
69	GND	-	Ground Terminal
70	SPCO	O	Phase Comparator Output Terminal
71	BSD	I	Burst Signal Detect Input Terminal
72	GLBSC	I	G/L Burst Signal Input Terminal

73	4FSC	O	4 FSC Output Terminal
74	SLPF	I	SLPF Input Terminal
75	FVRP	I	FVRP Input Terminal
76	FVR	I	FVR Input Terminal
77	VLPF	I	VLPF Input Terminal
78	HLPF2	I	HLPF2 Input Terminal
79	HLPF1	I	HLPF1 Input Terminal
80	GND	-	Ground Terminal
81	VCC	-	Power Supply Terminal
82	DLPFN	I	DLPFN Input Terminal
83	DLPFP	I	DLPFP Input Terminal
84	VCXO	O	VCXO Output Terminal
85	VCO	O	VCO Output Terminal
86	DECSEL	I	DECSEL Input Terminal
87	XVBS	O	XVBS Output Terminal
88	HPCO	O	H.Phase Comparator Output Terminal
89	VPCO	O	V. Phase Comparator Output Terminal
90	DPCO	O	Phase Comparator output Terminal
91	GLVD	I	G/L VD Input Terminal
92	VD2	I	VD2 Input Terminal
93	LP	I	LP Input Terminal
94	GLSYNC	I	G/L Sync Signal Input Terminal
95	MVPC	I	MVPC Input Terminal.
96	MS	I	MS Input Terminal.
97	NP	I	NTSC/PAL Select Input Terminal
98	RBLKO	I/O	Blanking Pulse Input/Output Terminal
99	FBLK	O	Blanking Pulse Output Terminal
100	FVD	O	FVD Output Terminal
101	FWHD	O	FWHD Output Terminal
102	FSYNC	O	FSync Output Terminal
103	CLKO	O	Clock Pulse Output Terminal
104	TCLR	I	TCLR Input Terminal
105	VC1	O	VC1 Output Terminal
106	CO IN	I	Phase Comparator Input Terminal
107	CO OUT	O	Phase Comparator Output Terminal
108	GND	-	Ground Terminal

Pin	Name	I/O	Description
109	VCC	I	Power Supply Terminal
110	VC2	O	VC2 Output Terminal
111	CXIN	I	Phase Comparator Input Terminal
112	CXOUT	O	Phase Comparator Output Terminal
113	POR	I	POR Input Terminal
114	LL DET	I	Line Lock Detect Input Terminal
115	CSYNC	O	Composite Sync Signal Output Terminal
116	CBLK	O	Composite Blanking Pulse Output Terminal
117	BF	I/O	BF Input /Output Terminal
118	CP2	O	Clamp Pulse Output Terminal
119	PWHD	I	PWHD Input Terminal
120	WHD	I/O	WHD Input/Output Terminal
121	VD	O	VD Output Terminal
122	FELD	I/O	FELD Input/Output Terminal
123	CHAC	I	CHAC Input Terminal
124	CHAB	I	CHAB Input Terminal
125	ZOOMC	I	ZOOMC Input Terminal
126	ZOOMB	I	ZOOMB Input Terminal
127	VLTWR	I	VLTWR Input Terminal
128	CCDCK	I	CCDCK Input Terminal

2-6 IC11

This IC (YWUPC664GS) is used for converting from 8 bits data signal to analog signal.
The pin identification of this IC is as follows.

Pin	Name	I/O	Description
1~8	DY1~DY8	I	Luminance Data Input Terminal
9~16	DC1~DC8	I	Chrominance Data Input Terminal
17	CLKC	I	Clock Pulse Input Terminal for Chrominance
18	CLKY	I	Clock Pulse Input Terminal for Luminance
19	GND	-	Ground Terminal
20	DVCC	I	Power Supply Terminal for Digital Circuit
21	COMP	I	COMP Input Terminal
22	AVCC	I	Power Supply Terminal for Analog Circuit
23	VRT	I	Top Reference Voltage Terminal
24	VREF	I	Reference Voltage
25	VRST	I	VRST Input Terminal
26	GND	-	Ground Terminal
27	COUT	O	Chrominance Signal Output Terminal
28	GND	-	Ground Terminal
29	YOUT	O	Luminance Signal Output Terminal
30	GND	-	Ground Terminal
31	AVCC	I	Power Supply Terminal for Analog Circuit
32	DVCC	I	Power Supply Terminal for Digital Circuit
33~36	NC	-	Not Used

About Your Computer

In order to run the E.V.R (Electric Variable Resistor) adjustment program your IBM-PC (PS2or AT type) or compatible must meet the following requirements :

- The DOS Operating System must be 3.3 or higher.
- The Operating System must be 100% compatible with your computer.
- The memory in your IBM-PC must be at least 640K-bytes, and 512K-bytes shall be available to the E.V.R adjustment program.

Installing E.V.R Adjustment Program

- The Example given here is for A 2 drive computer, your procedure might vary slightly depending on drive configuration.
- Formatting new disk and making a copy of DOS Operating System

  a) Insert disk containing DOS operating system into your floppy drive (for example, drive A) and type **A** :
  b) Insert new disk into your floppy drive (for example, drive B).
  c) Format and make a copy of DOS operating system from your original disk to new disk by typing **FORMAT B : / S** and press **ENTER.**
  d) Type **COPY ANSI. SYS B** : and press **ENTER.**

- Install E.V.R Adjustment Program onto formatted new disk with DOS operating system.

  e) Take out original disk containing DOS operating system from your floppy drive (drive A) and insert disk containing E.V.R adjustment program into your floppy drive (drive A) and type **A** :
  f) At the prompt, type **CD IBMPC** and press **ENTER.**
  g) If required, type **COPY CONFIG. SYS B**: and press **ENTER.**
  h) Type **CD PAL.**
  i) Type **COPY ADJ2E. EXE B** : and press **ENTER.**
  j) Type **CD** \ and press **ENTER.**
  k) Type **CD SEQ** and press **ENTER.**
  l) Type **COPY CP410E. SEQ B** : and press **ENTER.**
  m) Type **CD** \ and press **ENTER.**
  n) Type **CD EVR** and press **ENTER.**
  o) Type **COPY CP410E. CP412E. CP414E EVR B** : and press **ENTER.**
  p) After completing installation of program, you are ready to use E.V.R adjustment program.

Note :

When completed the new disk should be a bootable disk which contains the following files :

1.	COMMAND	COM
2.	ANSI	SYS
3.	CONFIG	SYS
4.	ADJ2E	EXE
5.	CP410E	SEQ
6.	CP410E	EVR
7.	CP412E	EVR
8.	CP414E	EVR

ADJUSTMENT PROCEDURE

1. Test Equipment Required

The following test equipments are required for adjustment.

- Oscilloscope (50 MHz band width, dual trace, delayed with three probes)
- Vector scope
- Frequency counter
- Waveform monitor
- Under scanned color video monitor
- Lighting (140 footcandles (1400 lux) 3200°K)
- Lux meter
- Color temperature conversion filter (C12, C4)
  Refer following table for coversion filter.

KENKO	C4	C12
KODAK	82C	80B
FUJI	LBB2	LBB12

- Personal computer (IBM-PC/AT or PS2 type)
- Standard straight RS-232C cable
- ALC lens such as WV-LA12
- Manual iris lens
- Logarithmic gray scale chart (Part No. : YWV2310RB99)

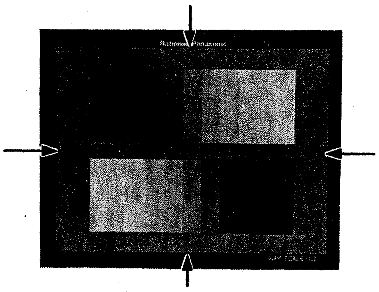


Fig. 1-1

- Color chip chart (Part No. : YWV2100RB98)

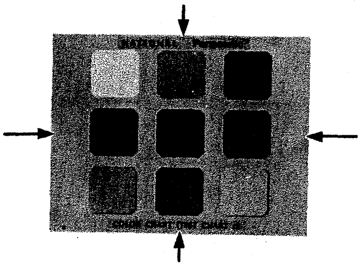
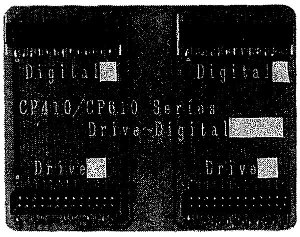
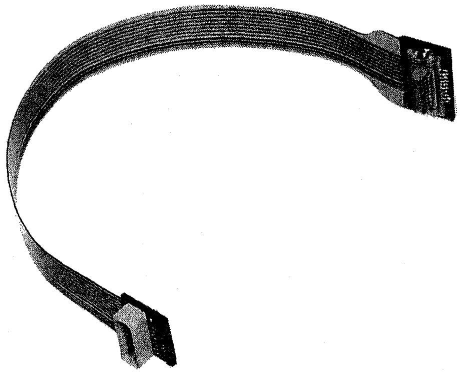


Fig. 1-2

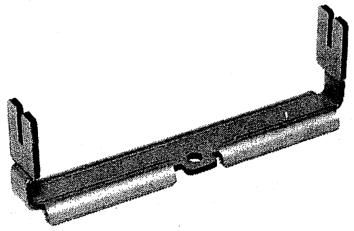
- Extension Board Assy
  (Following Extension board, Extension cable and Mounting bracket are included)
  (Part No. YWV0EA0326AN)



(Extension Board)



(Extension Cable)



(Mounting Bracket)

Fig. 1-3

- E.V.R Adjustment kit (YWV0EA0182AN)

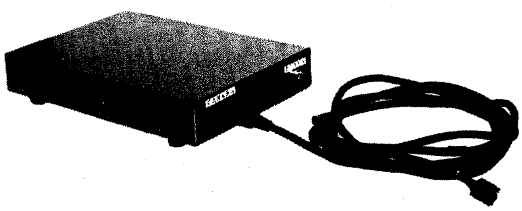


Fig. 1-4

2. Disassembling Procedure for Adjustment

- Remove two screws fixing the camera mounting and remove the camera mounting.

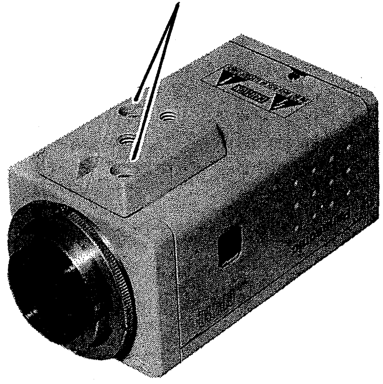

Remove two screws

Fig. 2-1

- Remove two screws fixing the bottom cover and remove the bottom cover.

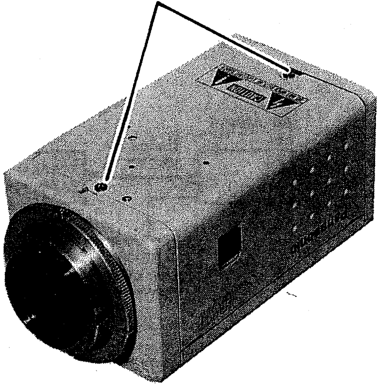

Remove two screws

Fig. 2-2

- Disconnect the connectors CN6 and CN1 from the Drive board and remove two screws fixing the Drive and Digital board, and remove the Drive and Digital board.

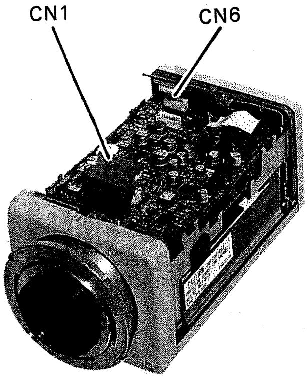


Fig. 2-3

- Fix Mounting Bracket by removed screw.

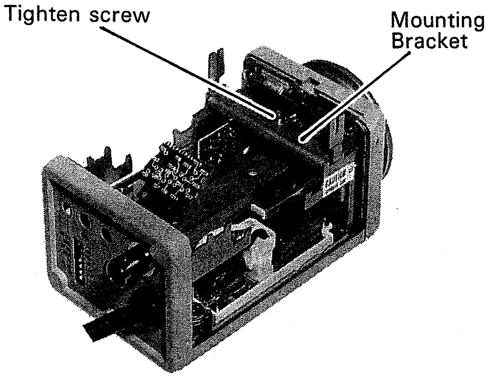

Tighten screw
Mounting Bracket

Fig. 2-4

- Connect the Drive board and Digital board by extension board.

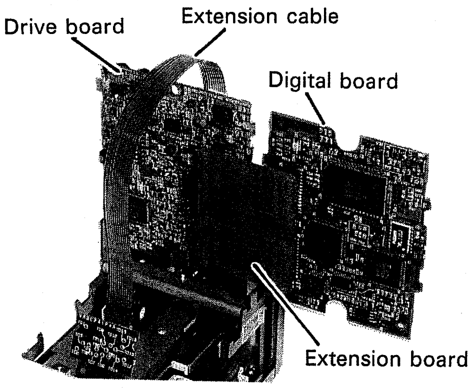

Drive board
Extension cable
Digital board
Extension board

Fig. 2-5

- Place the Drive board and connect the connectors CN6, and CN1 by Extension cable.

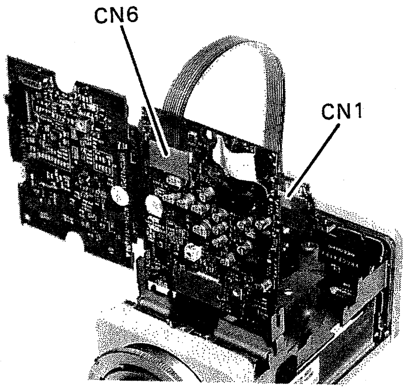


Fig. 2-6

3. CCD Assy Replacement Procedure

- Disassembling the camera while referring to the 2. **Disassembling Procedure for Adjustment.**
- Remove one screw fixing the front chassis and remove the front chassis.

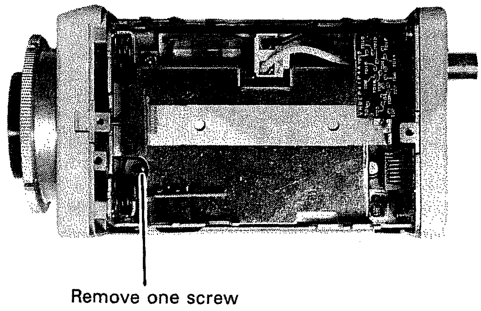

Remove one screw

Fig. 3-1

- Remove one screw fixing ALC board, and disconnect CN1 from Sensor board.
- Remove ALC connector (CN2) from the front chassis and remove ALC board.

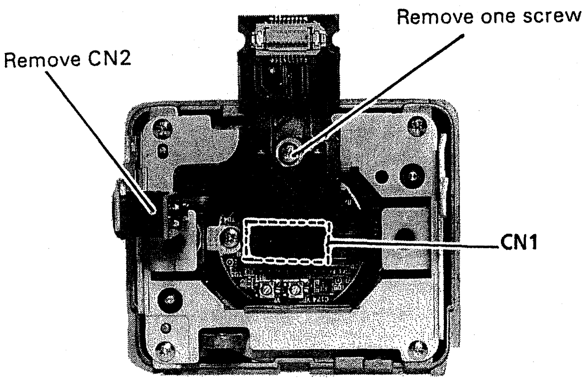

Remove one screw
Remove CN2
CN1

Fig. 3-2

- Remove four screws fixing the front chassis and remove the CCD image sensor assembly.

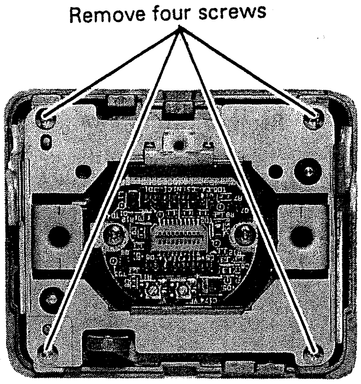

Remove four screws

Fig. 3-3

4. Connection and Setting up for Adjustment

- Connect VIDEO OUT Connector on the rear of camera to color video monitor through waveform monitor and vectorscope using coaxial cable.
- Terminate color video monitor with 75 ohms.
- Place the logarithmic grayscale chart in front of the camera.

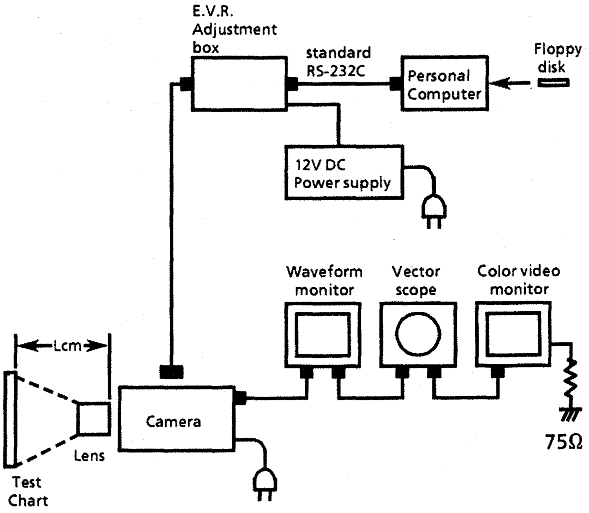

E.V.R. Adjustment box
standard RS-232C
Personal Computer
Floppy disk
12V DC Power supply
Waveform monitor
Vector scope
Color video monitor
Lcm
Camera
Lens
Test Chart
75Ω

Fig. 4-1

5. Adjustment Procedure

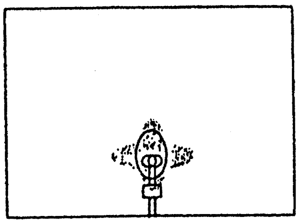
- Refer to page 29 for the **Location of test points and adjusting controls.**
- Set the switches and controls position as follows.
  - · Sync Selection Switch : INT
  - · AGC ON/OFF Switch : ON
  - · Electronic Light Control / Automatic Light control selection switch
  - · Detail Level Selection Switch : SHARP
  - · Backlight compensation ON/OFF Switch : OFF
  - · Lens Selection Switch DC
  - · Automatic Tracing White Balance Control ON/OFF Switch : ON
  - · Line-Lockphase Control : Center
  - · ATW Control : Center
  - · Video Level Control : Center

■ Adjustment Procedure-1

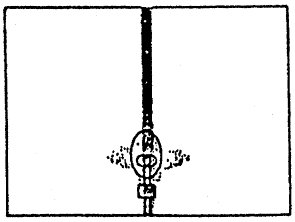
1. V.Sub Adjustment

Adjust : **VR2 (V.Sub)** **Sensor board**

- Attach the F1.4 manual iris lens on the camera and open the iris fully.
- Aim the camera at the bright object such as 40-watts lamp.
- While observing the picture on the video monitor, adjust VR2 so that the blooming becomes minimum.



GOOD



NO GOOD

2. Drive Vco adjustment (confirmation)

Test Point : TP1 (Vco) **Drive board**
Adjust : **L1 (Vco)** **Drive board**

- Connect digital voltmeter to TP1 on the drive board.
- Confirm that voltage at TP1 is 1.7±0.2V.
- If not, adjuist L1 so that voltage becomes 1.7±0.2V.

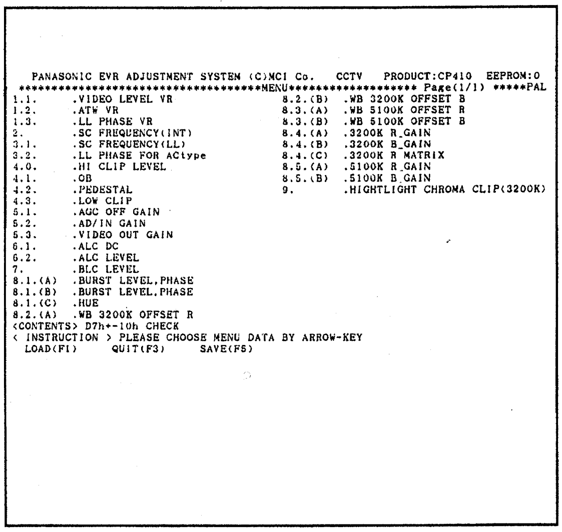
3. Line Lock Vco Adjustment (confirmation)

Test Point : TP1 (Vco) **Digital board**
Adjust : **L1 (LL Vco)** **Digital board**

- Connect digital voltmeter to TP1 on the digital board.
- Confirmation that voltage at TP1 is 1.7±0.2V.
- If not, adjust L1 so that voltage becomes 1.7±0.2V.

■ Adjustment Procedure-2 (E.V.R Adjustment)

- Connect E.V.R Adjustment box to CN3 on the drive board using extension cable supplied.
- Connect E.V.R Adjustment box to IBM-PC (Personal Computer) using standard RS-232C cable.
- Insert new disk containing DOS operating system and E.V.R Adjustment Program into IBM-PC and turns on power of IBM-PC.
- At the prompt, type **ADJ2E CP410E** and press **ENTER,** following initial menu for adjustment will be displayed.



```
   PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.   CCTV   PRODUCT:CP410  EEPROM:0
 ************************************MENU******************* Page(1/1) *****PAL
1.1.     .VIDEO LEVEL VR                         8.2.(B)  .WB 3200K OFFSET B
1.2.     .ATW VR                                 8.3.(A)  .WB 5100K OFFSET R
1.3.     .LL PHASE VR                            8.3.(B)  .WB 5100K OFFSET B
2.       .SC FREQUENCY(INT)                      8.4.(A)  .3200K R_GAIN
3.1.     .SC FREQUENCY(LL)                       8.4.(B)  .3200K B_GAIN
3.2.     .LL PHASE FOR ACtype                    8.4.(C)  .3200K R MATRIX
4.0.     .HI CLIP LEVEL                          8.5.(A)  .5100K R_GAIN
4.1.     .OB                                     8.5.(B)  .5100K B_GAIN
4.2.     .PEDESTAL                               9.       .HIGHTLIGHT CHROMA CLIP(3200K)
4.3.     .LOW CLIP
5.1.     .AGC OFF GAIN
5.2.     .AD/IN GAIN
5.3.     .VIDEO OUT GAIN
6.1.     .ALC DC
6.2.     .ALC LEVEL
7.       .BLC LEVEL
8.1.(A)  .BURST LEVEL,PHASE
8.1.(B)  .BURST LEVEL,PHASE
8.1.(C)  .HUE
8.2.(A)  .WB 3200K OFFSET R
<CONTENTS> D7h+-10h CHECK
< INSTRUCTION > PLEASE CHOOSE MENU DATA BY ARROW-KEY
  LOAD(F1)      QUIT(F3)      SAVE(F5)
```

- Press **SAVE (F5)**. Then computer will ask you for the file name.
- Give appropriate file name to the computer. But do not use CP410E.EVR for your file name. This saving procedure is recommended to keep the current status of the camera.
- Press **LOAD (F1)** and type **CP410E.EVR**, and press **ENTER** for presetting adjustment of the camera.
- Press **ENTER** for starting adjustment.

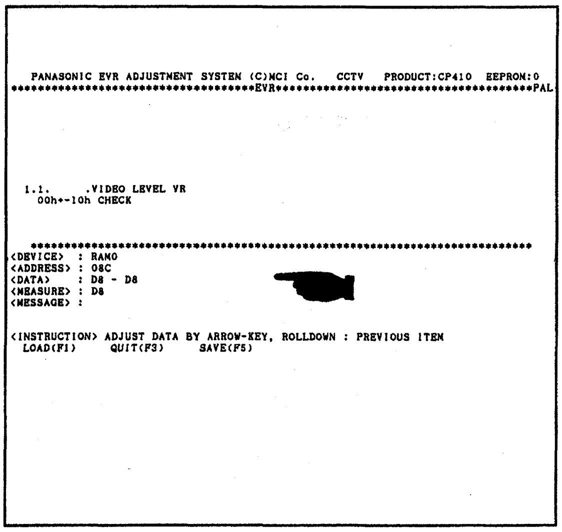
NOTE :

- **EEPROM** mentioned in this adjustment procedure is IC4 on digital board.
- **RAM** mentioned in this adjustment procedure is IC8 on digital board.
- Some numbers of the following Adjustment Procedure-2 are missing to match the adjustment items with the EVR adjustment items.

1-1. Video level VR adjustment (confirmation)

Test Point : **RAM (8C)**
Adjust : **VIDEO LEVEL VR** **Rear panel**

- Confirm data with **ARROW** keys so that the data varies between -10h and +10h.
- If not, readjust video level VR.



```
   PANASONIC EVR ADJUSTMENT SYSTEN (C)MCI Co.   CCTV   PRODUCT:CP410  EEPRON:0
*************************************EVR****************************************PAL



  1.1.      .VIDEO LEVEL VR
    00h+-10h CHECK

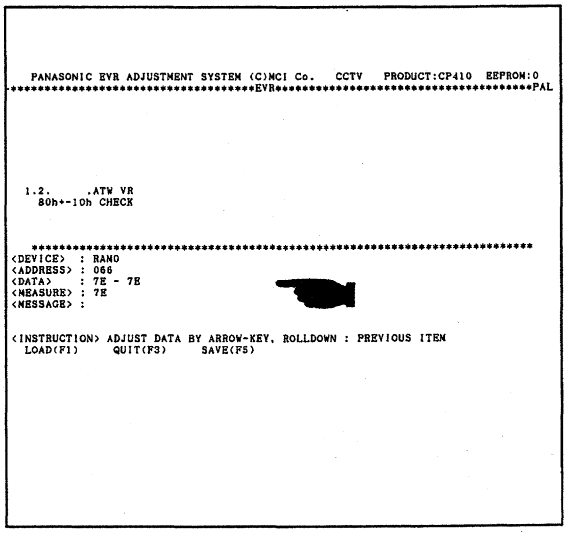

   *****************************************************************************
<DEVICE>  : RAMO
<ADDRESS> : 08C
<DATA>    : D8 - D8
<MEASURE> : D8
<MESSAGE> :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD(F1)     QUIT(F3)     SAVE(F5)
```

1-2. ATW VR adjustment (confirmation)

Test Point : **RAM (66)**
Adjust : **ATW VR** **Rear Panel**

- Confirm data with **ARROW** keys so that the data varies between 70h and 90h.
- If not, readjust ATW VR.



```
   PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.   CCTV   PRODUCT:CP410  EEPROM:0
*************************************EVR****************************************PAL



  1.2.      .ATW VR
    80h+-10h CHECK

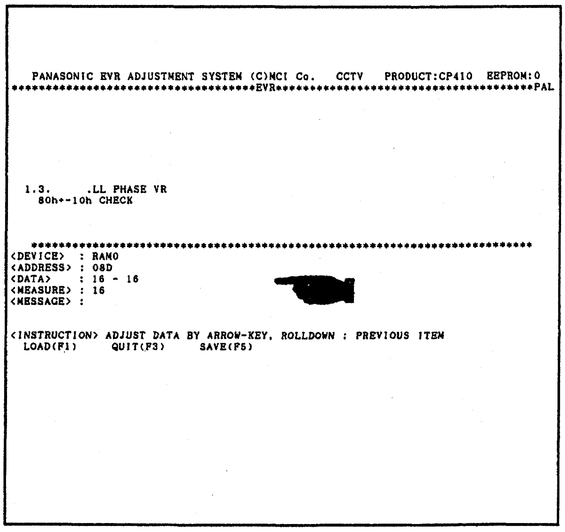

   *****************************************************************************
<DEVICE>  : RAMO
<ADDRESS> : 066
<DATA>    : 7E - 7E
<MEASURE> : 7E
<MESSAGE> :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD(F1)     QUIT(F3)     SAVE(F5)
```

1-3. LL phase VR adjustment (confirmation)

Test Point : **RAM (8D)**
Adjust : **LL PHASE VR** **Rear panel**

- Confirm data with **ARROW** keys so that the data varies between 05h and 25h.
- If not, readjust LL Phase VR.



```
   PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.   CCTV   PRODUCT:CP410  EEPROM:0
*************************************EVR****************************************PAL



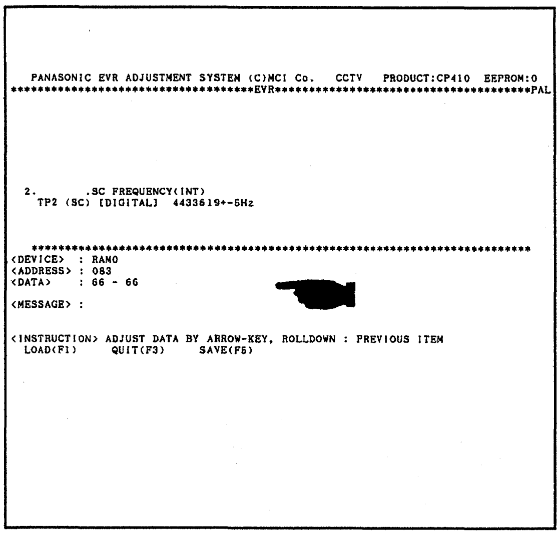
  1.3.      .LL PHASE VR
    80h+-10h CHECK


   *****************************************************************************
<DEVICE>  : RAMO
<ADDRESS> : 08D
<DATA>    : 16 - 16
<MEASURE> : 16
<MESSAGE> :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD(F1)     QUIT(F3)     SAVE(F5)
```

2. Sub carrier frequency adjustment (INT)

Test Point : TP2 (SC VCXO) **Digital board**
Adjust : RAM (83)



```
  PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.   CCTV   PRODUCT:CP410  EEPROM:0
************************************EVR****************************************PAL




 2.       .SC FREQUENCY(INT)
   TP2 (SC) [DIGITAL]  4433619+-5Hz


  ****************************************************************************
<DEVICE>  : RAMO
<ADDRESS> : 083
<DATA>    : 66 - 66

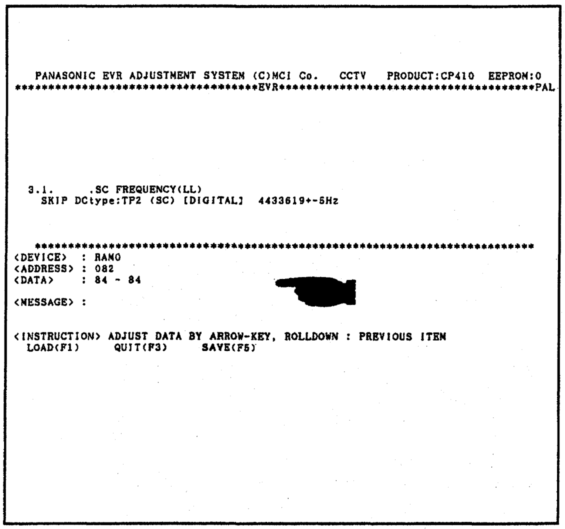
<MESSAGE> :


<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD(F1)      QUIT(F3)      SAVE(F5)
```

- Connect frequency counter to TP2.
- Adjust data by **ARROW** keys so that sub carrier frequency beomes 4.433619 MHz ± 5 Hz.
- Press **ENTER** key.

3-1. Sub carrier frequency adjustment (LL)

Test Point : TP2 (SC VCXO) **Digital board**
Adjust : RAM (82)



```
  PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.   CCTV   PRODUCT:CP410  EEPROM:0
************************************EVR****************************************PAL




 3.1.     .SC FREQUENCY(LL)
   SKIP DCtype:TP2 (SC) [DIGITAL]  4433619+-5Hz


  ****************************************************************************
<DEVICE>  : RAMO
<ADDRESS> : 082
<DATA>    : 84 - 84

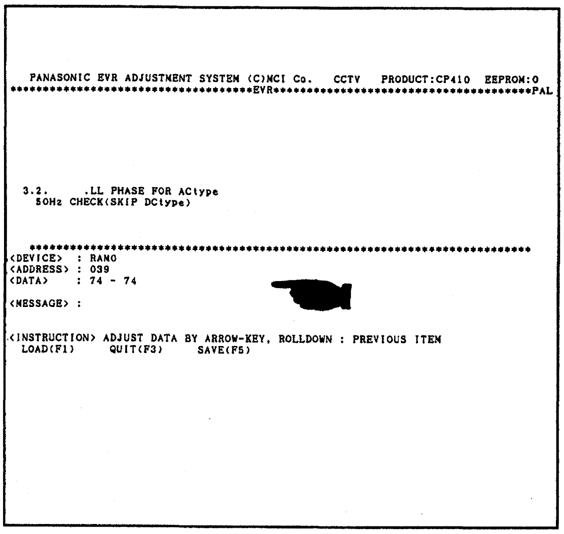
<MESSAGE> :


<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD(F1)      QUIT(F3)      SAVE(F5)
```

- Connect frequency counter to TP2.
- Adjust data by **ARROW** keys so that sub carrier frequency becomes 4.433619 MHz ±5 Hz.
- Press **ENTER** key.

3-2. LL phase adjustment (WV-CP410 and CP414 only)

Test Point : VIDEO OUTPUT Connector
AC Input terminal **Power board**
Adjust : RAM (39)



```
  PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.   CCTV   PRODUCT:CP410  EEPROM:0
************************************EVR****************************************PAL




 3.2.     .LL PHASE FOR ACtype
   50Hz CHECK(SKIP DCtype)


  ****************************************************************************
<DEVICE>  : RANO
<ADDRESS> : 039
<DATA>    : 74 - 74

<MESSAGE> :


<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEN
  LOAD(F1)      QUIT(F3)      SAVE(F5)
```

- Connect 2 probes of oscilloscope to VIDEO OUTPUT connector and AC input terminal on the power board.
- Set the oscilloscope to V. rate.
- Adjust data by **ARROW** keys so that the decay point of V sync signal delays 2H±4H from zero cross point of AC power source as shown in Fig. 5-1.

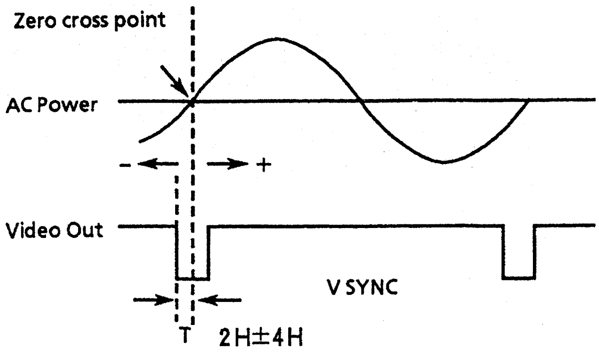
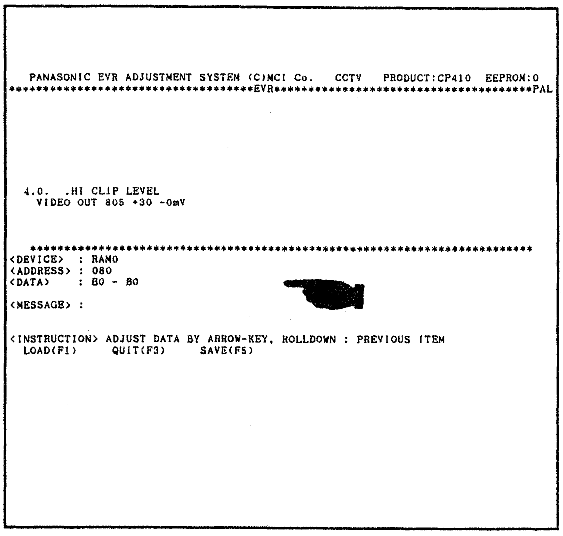


Fig. 5-1

- Press **ENTER** key.

4-0. Highclip adjustment

Test Point : VIDEO OUTPUT connector Rear board
Adjust : RAM (80)



```
  PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.   CCTV   PRODUCT:CP410  EEPROM:0
***********************************EVR****************************************PAL



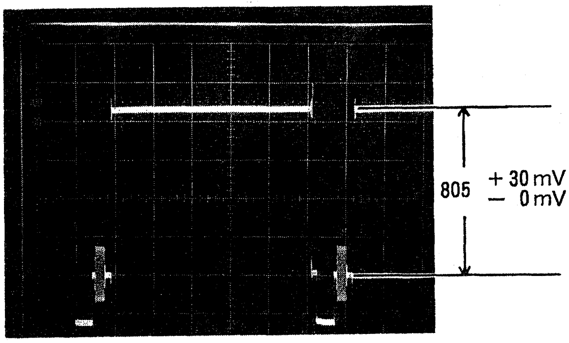
 4.0.  .HI CLIP LEVEL
   VIDEO OUT 805 +30 -0mV


  **************************************************************************
<DEVICE>  : RAM0
<ADDRESS> : 080
<DATA>    : B0 - B0

<MESSAGE> :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD(F1)     QUIT(F3)     SAVE(F5)
```

- Open the Lens iris.
- Aim the camera at the white chart.
- Adjust data by **ARROW** keys so that signal level becomes 805+30, -0 mV.

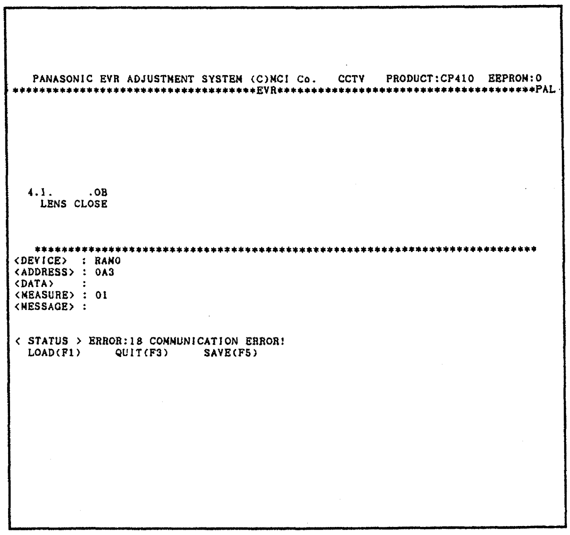


- Press **ENTER** key.

4-1. OB adjustment

Test Point : VIDEO OUTPUT connector Rear board
Adjust : RAM (A3)

- Confirm that lens iris closes.
- Adjust data by **ARROW** keys so that measure level becomes 01.



```
  PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.   CCTV   PRODUCT:CP410  EEPROM:0
***********************************EVR****************************************PAL



 4.1.     .OB
   LENS CLOSE

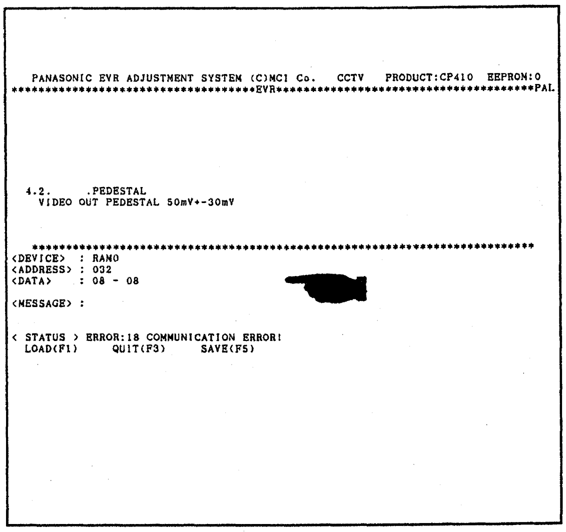

  **************************************************************************
<DEVICE>  : RAM0
<ADDRESS> : 0A3
<DATA>    :
<MEASURE> : 01
<MESSAGE> :

< STATUS > ERROR:18 COMMUNICATION ERROR!
  LOAD(F1)     QUIT(F3)     SAVE(F5)
```

- Press **ENTER** key.

4-2. Pedestal adjustment

Test Point : VIDEO OUTPUT connector Rear board
Adjust : RAM (32)



```
  PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.   CCTV   PRODUCT:CP410  EEPROM:0
***********************************EVR****************************************PAL



 4.2.     .PEDESTAL
   VIDEO OUT PEDESTAL 50mV+-30mV


  **************************************************************************
<DEVICE>  : RAM0
<ADDRESS> : 032
<DATA>    : 08 - 08

<MESSAGE> :

< STATUS > ERROR:18 COMMUNICATION ERROR!
  LOAD(F1)     QUIT(F3)     SAVE(F5)
```

- Confirm that lens iris closes.
- Connect waveform monitor or terminated oscilloscope to VIDEO OUTPUT connector.
- Adjust data by **ARROW** keys so that signal level becomes 50±5mV as shown in Fig. 5-2.

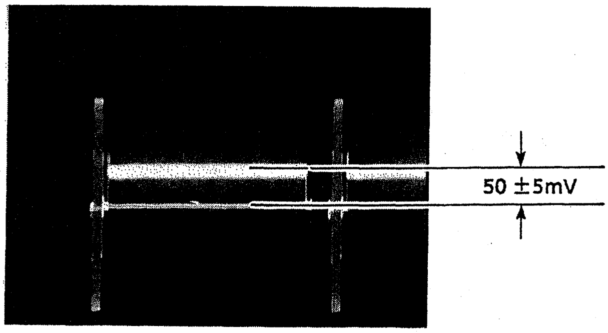
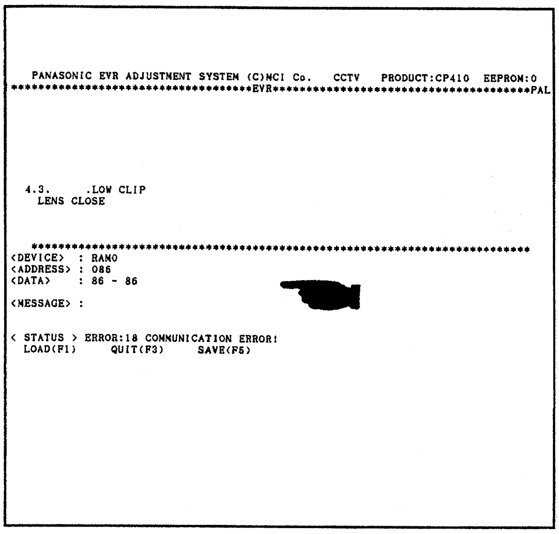


Fig. 5-2

- Press **ENTER** key.

4-3. Low clip adjustment

Test Point : VIDEO OUTPUT connector Rear board
Adjust : RAM (86)



```
   PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.   CCTV   PRODUCT:CP410  EEPROM:0
*************************************EVR**************************************PAL



  4.3.     .LOW CLIP
    LENS CLOSE


   ***************************************************************************
<DEVICE>  : RAMO
<ADDRESS> : 086
<DATA>    : 86 - 86

<MESSAGE> :

< STATUS > ERROR:18 COMMUNICATION ERROR!
  LOAD(F1)     QUIT(F3)     SAVE(F5)
```

- Confirm that lens iris closes.
- Connect waveform monitor or terminated oscilloscope to VIDEO OUTPUT connector.
- Adjust data by **ARROW** keys so that signal level becomes 50±5mV as shown in Fig. 5-3.

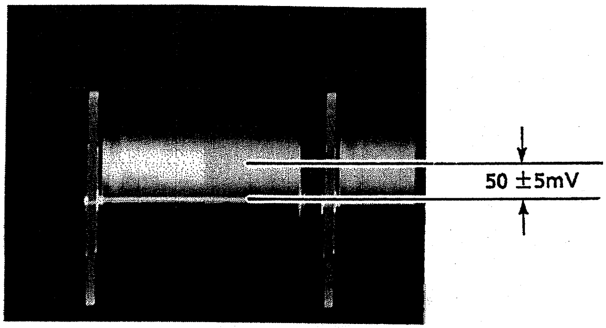
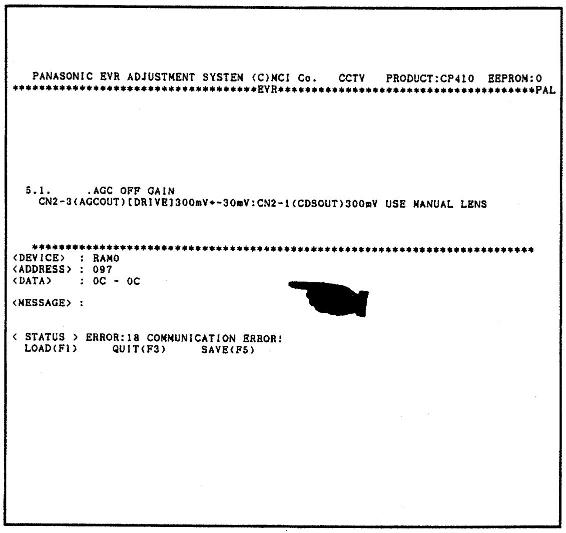


Fig. 5-3

- Press **ENTER** key.

5-1. AGC OFF gain adjustment

Test Point : Pin 3 (AGC OUT) of CN2 Drive board
Adjust : RAM (97)



```
   PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.   CCTV   PRODUCT:CP410  EEPROM:0
*************************************EVR**************************************PAL



  5.1.     .AGC OFF GAIN
    CN2-3(AGCOUT)[DRIVE]300mV+-30mV:CN2-1(CDSOUT)300mV USE MANUAL LENS


   ***************************************************************************
<DEVICE>  : RAMO
<ADDRESS> : 097
<DATA>    : 0C - 0C

<MESSAGE> :

< STATUS > ERROR:18 COMMUNICATION ERROR!
  LOAD(F1)     QUIT(F3)     SAVE(F5)
```

- Change lens from automatic iris control lens to manual iris lens.
- Connect oscilloscope to Pin 3 (AGC OUT) of CN2 on the drive board.
- Aim the camera at logarithmic gray scale chart.
- Adjust data by **ARROW** keys so that signal level becomes 300±30mV as shown in Fig. 5-4.

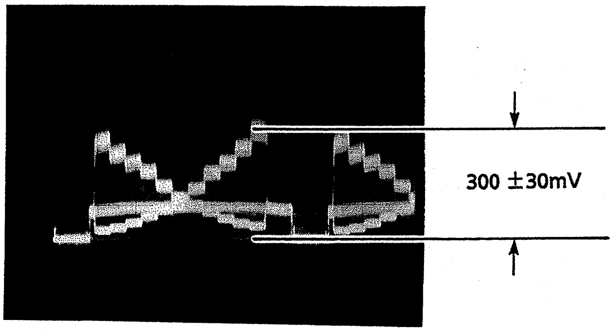
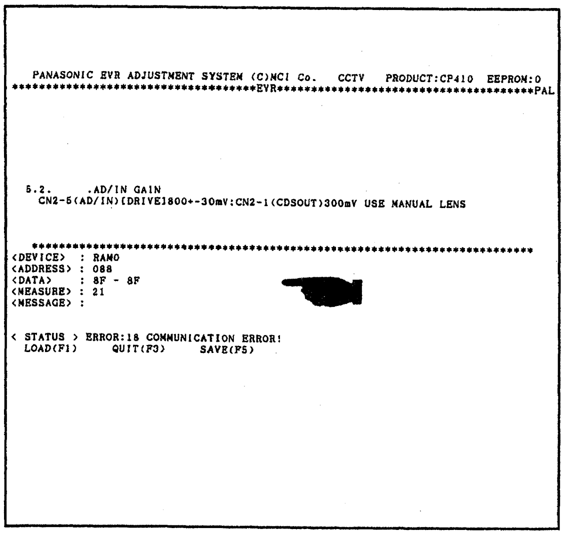


Fig. 5-4

- Press **ENTER** key.

5-2. AD/IN gain adjustment

Test Point : **Pin 5 (AD/IN) of CN2** **Drive board**
Adjust : **RAM (88)**



```
   PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.   CCTV   PRODUCT:CP410  EEPROM:0
************************************EVR****************************************PAL



  5.2.      .AD/IN GAIN
    CN2-5(AD/IN)[DRIVE]800+-30mV:CN2-1(CDSOUT)300mV USE MANUAL LENS


   ****************************************************************************
<DEVICE>  : RAM0
<ADDRESS> : 088
<DATA>    : 8F - 8F
<MEASURE> : 21
<MESSAGE> :

< STATUS > ERROR:18 COMMUNICATION ERROR!
  LOAD(F1)      QUIT(F3)      SAVE(F5)
```

- Connect oscilloscope to Pin 5 (AD/IN) of CN2 on the drive board.
- Aim the camera at logarithmic gray scale chart.
- Adjust data by **ARROW** keys so that signal level becomes 800±30mV as shown in Fig. 5-5.

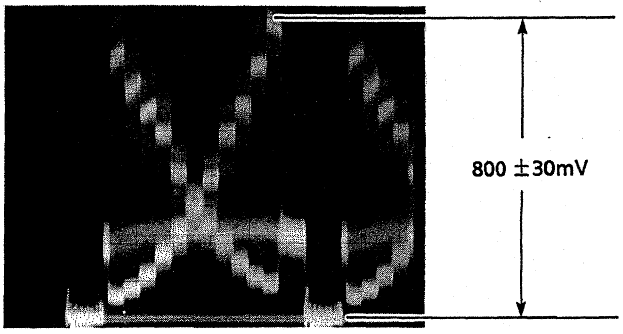
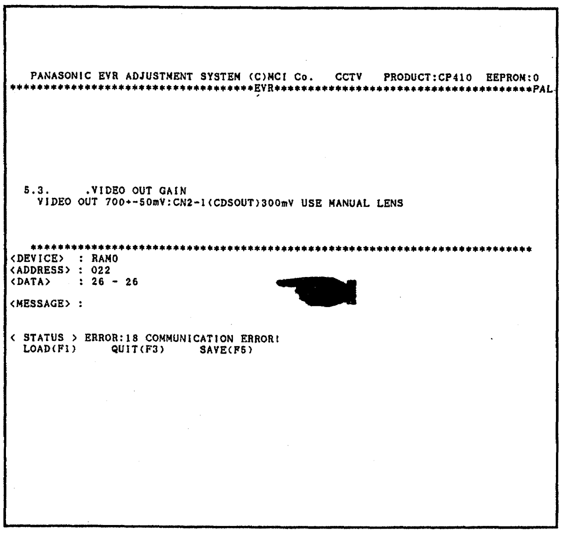


Fig. 5-5

- Press **ENTER** key.

5-3. VIDEO OUT gain adjustment

Test Point : **VIDEO OUTPUT connector** **Rear board**
Adjust : **RAM (22)**



```
   PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.   CCTV   PRODUCT:CP410  EEPROM:0
************************************EVR****************************************PAL



  5.3.      .VIDEO OUT GAIN
    VIDEO OUT 700+-50mV:CN2-1(CDSOUT)300mV USE MANUAL LENS


   ****************************************************************************
<DEVICE>  : RAM0
<ADDRESS> : 022
<DATA>    : 26 - 26

<MESSAGE> :

< STATUS > ERROR:18 COMMUNICATION ERROR!
  LOAD(F1)      QUIT(F3)      SAVE(F5)
```

- Aim the camera at logarithmic gray scale chart.
- Connect waveform monitor or terminated oscilloscope to VIDEO OUTPUT Connector.
- Adjust data by **ARROW** keys so that signal level becomes 700±50mV as shown in Fig. 5-6.

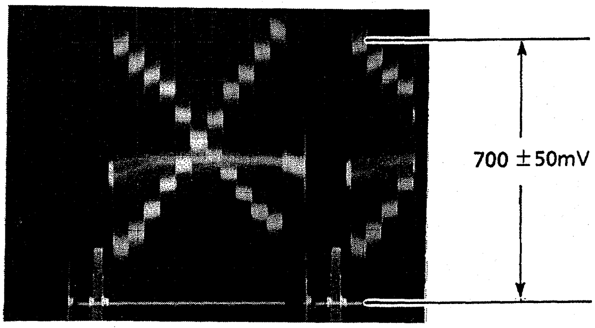
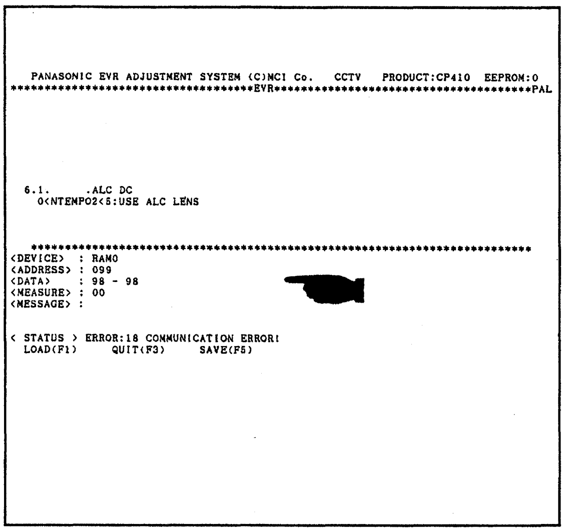


Fig. 5-6

- Press **ENTER** key.

6-1. ALC DC Adjustment

Test Point : RAM (92)
Adjust : RAM (99)



```
   PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.    CCTV   PRODUCT:CP410  EEPROM:0
*************************************EVR****************************************PAL


  6.1.      .ALC DC
    0<NTEMPO2<5:USE ALC LENS

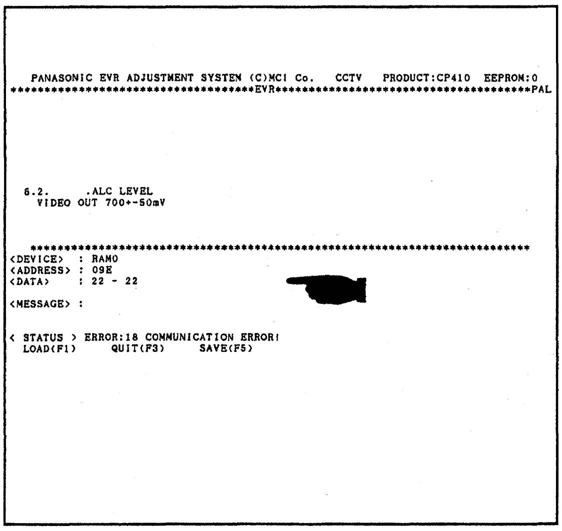

   ****************************************************************************
<DEVICE>  : RAM0
<ADDRESS> : 099
<DATA>    : 98 - 98
<MEASURE> : 00
<MESSAGE> :

< STATUS > ERROR:18 COMMUNICATION ERROR!
  LOAD(F1)     QUIT(F3)     SAVE(F5)
```

- Change lens from manual iris lens to automatic iris control lens.
- Aim the camera at logarithmic gray scale chart.
- Adjust data by **ARROW** keys so that measure level becomes between 00 and 05.
- Press **ENTER** key.

6-2. ALC level adjustment

Test Point : VIDEO OUTPUT connector Rear Board
Adjust : RAM (9E)



```
   PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.    CCTV   PRODUCT:CP410  EEPROM:0
*************************************EVR****************************************PAL


  6.2.      .ALC LEVEL
    VIDEO OUT 700+-50mV


   ****************************************************************************
<DEVICE>  : RAM0
<ADDRESS> : 09E
<DATA>    : 22 - 22

<MESSAGE> :

< STATUS > ERROR:18 COMMUNICATION ERROR!
  LOAD(F1)     QUIT(F3)     SAVE(F5)
```

- Aim the camera at logarithmic gray scale chart.
- Connect waveform monitor or terminated oscilloscope to VIDEO OUTPUT connector.
- Adjust data by **ARROW** keys so that single level becomes 700±50mV as shown in Fig. 5-7.

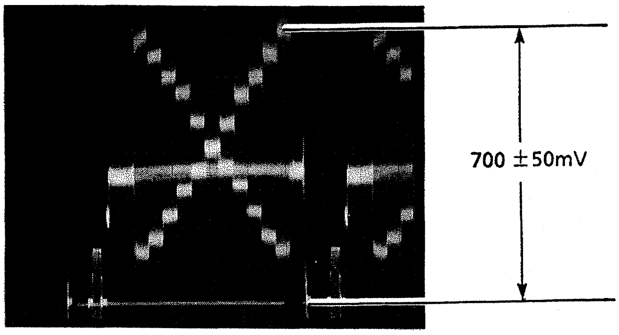
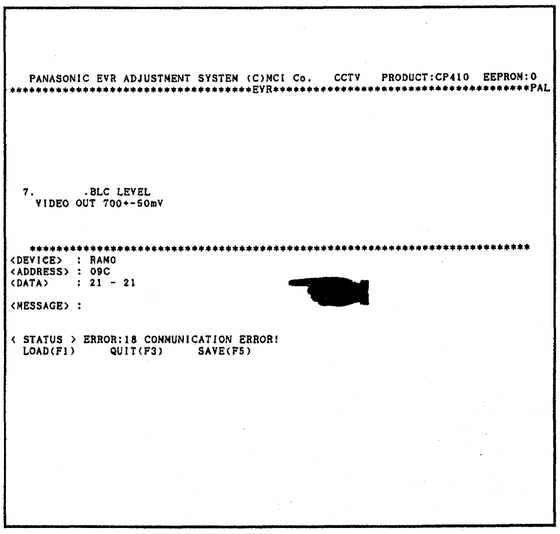


Fig. 5-7

- Press **ENTER** key.

7. BLC level adjustment

Test Point : VIDEO OUTPUT connector Rear Board
Adjust : RAM (9C)



```
   PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.    CCTV   PRODUCT:CP410  EEPROM:0
*************************************EVR****************************************PAL


  7.        .BLC LEVEL
    VIDEO OUT 700+-50mV


   ****************************************************************************
<DEVICE>  : RAM0
<ADDRESS> : 09C
<DATA>    : 21 - 21

<MESSAGE> :

< STATUS > ERROR:18 COMMUNICATION ERROR!
  LOAD(F1)     QUIT(F3)     SAVE(F5)
```

- Aim the camera at logarithmic gray scale chart.
- Connect waveform monitor or terminated oscilloscope to VIDEO OUTPUT connector.
- Adjust data by **ARROW** keys so that single level becomes 700±50mV as shown in Fig. 5-8.

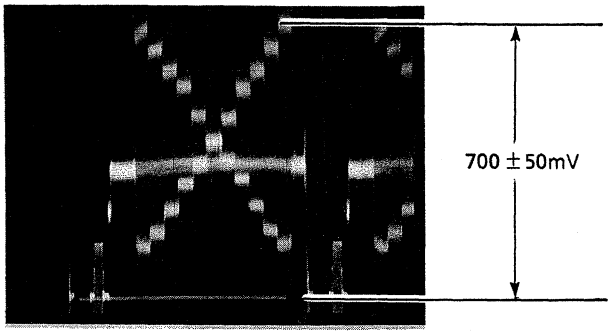
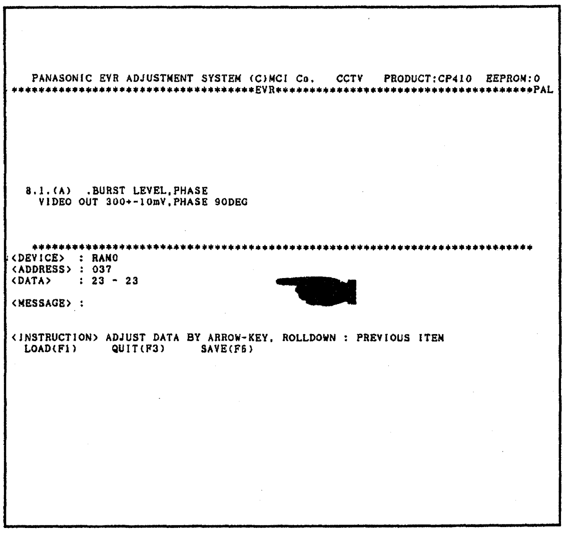


Fig. 5-8

- Press **ENTER** key.

8-1. (A) Burst level, Phase adjustment

Test Point : VIDEO OUTPUT connector Rear Board
Adjust : RAM (37)



```
   PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.    CCTV    PRODUCT:CP410  EEPROM:0
*************************************EVR****************************************PAL



  8.1.(A)   .BURST LEVEL,PHASE
    VIDEO OUT 300+-10mV,PHASE 90DEG


   ******************************************************************************
<DEVICE>   : RAM0
<ADDRESS> : 037
<DATA>     : 23 - 23

<MESSAGE> :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD(F1)      QUIT(F3)      SAVE(F5)
```

- Aim the camera at logarithmic gray scale chart.
- Adjust data by **ARROW** keys so that burst level becomes 300± 10mV as shown in Fig. 5-10.

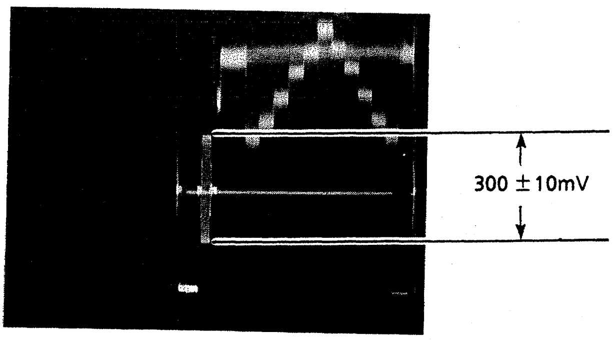
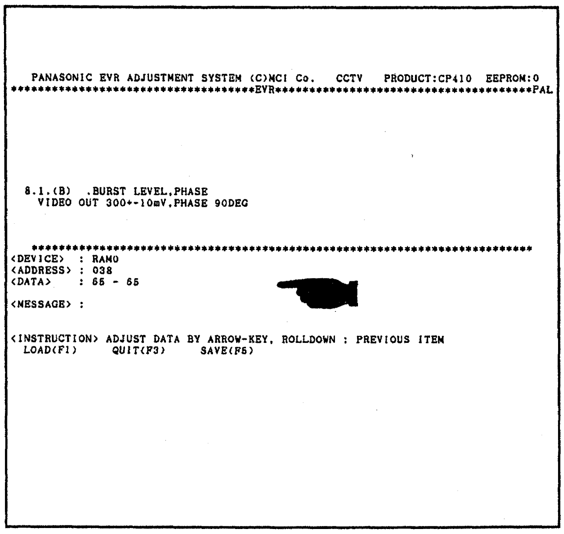


Fig. 5-10

- Press **ENTER** key.

8-1. (B) Burst level, Phase adjustment

Test Point : VIDEO OUTPUT connector Rear board
Adjust : RAM (38)



```
   PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.    CCTV    PRODUCT:CP410  EEPROM:0
*************************************EVR****************************************PAL



  8.1.(B)   .BURST LEVEL,PHASE
    VIDEO OUT 300+-10mV,PHASE 90DEG


   ******************************************************************************
<DEVICE>   : RAM0
<ADDRESS> : 038
<DATA>     : 65 - 65

<MESSAGE> :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD(F1)      QUIT(F3)      SAVE(F5)
```

- Adjust data by ARROW keys so that burst phase becomes 135° as shown Fig. 5-11.

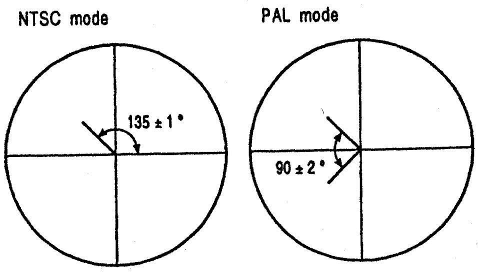
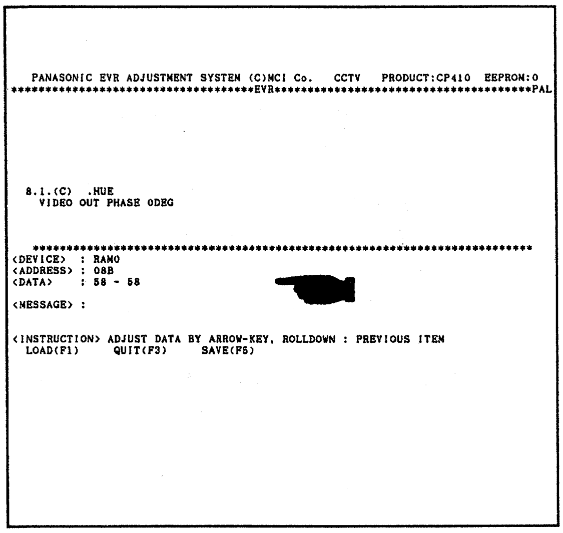


Fig. 5-11

- Press ENTER key.

8-1. (C) Hue adjustment



```
   PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.   CCTV   PRODUCT:CP410  EEPRON:0
**************************************EVR****************************************PAL


  8.1.(C)  .HUE
    VIDEO OUT PHASE 0DEG

   ********************************************************************************
<DEVICE>  : RAMO
<ADDRESS> : 08B
<DATA>    : 58 - 58

<MESSAGE> :

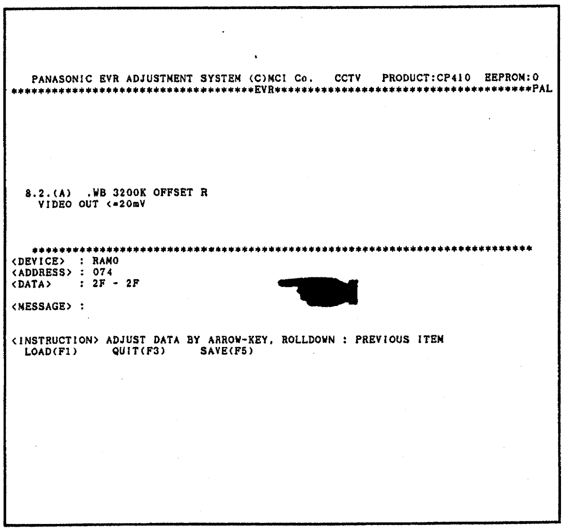
<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD(F1)      QUIT(F3)      SAVE(F5)
```

- Adjust data by **ARROW** keys so that both red vectors match (0± 1°).
- Press **ENTER** key.

8-2. (A) R White balance offset adjustment (3200°K)

Test Point : **VIDEO OUTPUT connector Rear board**
Adjust : **RAM (74)**

- Aim the camera at white chart.
- Set the gain of vectorscope to maximum.



```
   PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.   CCTV   PRODUCT:CP410  EEPROM:0
**************************************EVR****************************************PAL


  8.2.(A)  .WB 3200K OFFSET R
    VIDEO OUT <=20mV

   ********************************************************************************
<DEVICE>  : RAMO
<ADDRESS> : 074
<DATA>    : 2F - 2F

<MESSAGE> :

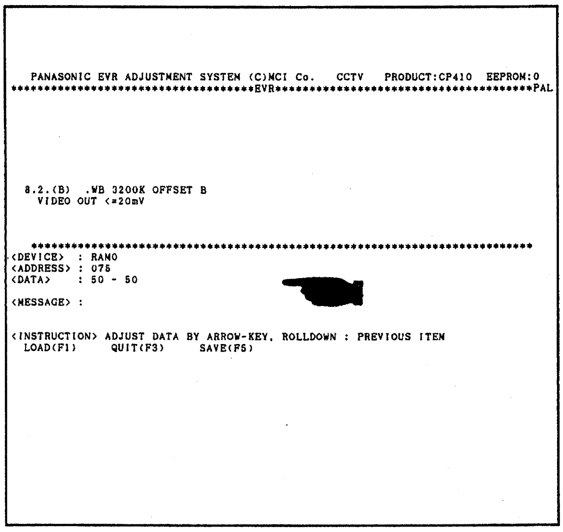
<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD(F1)      QUIT(F3)      SAVE(F5)
```

- Adjust data by **ARROW** keys so that vector position at the center of vectorscope.
- Press **ENTER** key.

8-2. (B) B White balance offset adjustment (3200°K)

Test Point : **VIDEO OUTPUT connector Rear board**
Adjust : **RAM (75)**

- Aim the camera at white chart.
- Set the gain of vectroscope to maximum.



```
   PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.   CCTV   PRODUCT:CP410  EEPROM:0
**************************************EVR****************************************PAL


  8.2.(B)  .WB 3200K OFFSET B
    VIDEO OUT <=20mV

   ********************************************************************************
<DEVICE>  : RAMO
<ADDRESS> : 075
<DATA>    : 50 - 50

<MESSAGE> :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD(F1)      QUIT(F3)      SAVE(F5)
```

- Adjust data by **ARROW** key so that vector position at the center of vectorscope as shown in Fig. 5-12.
- Press **ENTER** key.
- If the vector does not position at the center of vectorscope, press PG DN key twice to return to 8-2 (A), and repeat above procedure until vector position at the center of vectorscope.

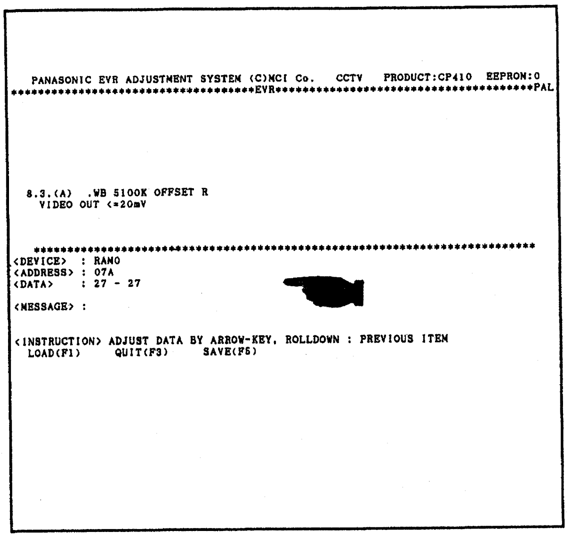
Fig. 5-12

- Press **ENTER** key.

8-3. (A) R White balance offset adjustment (5100°K)

Test Point : **VIDEO OUTPUT connector Rear board**
Adjust : **RAM (7A)**

- Aim the camera at white chart.
- Set the gain of vectorscope to maximum.



```
  PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.    CCTV   PRODUCT:CP410  EEPROM:0
**************************************EVR****************************************PAL


 8.3.(A)  .WB 5100K OFFSET R
   VIDEO OUT <=20mV


   ****************************************************************************
<DEVICE>  : RAMO
<ADDRESS> : 07A
<DATA>    : 27 - 27

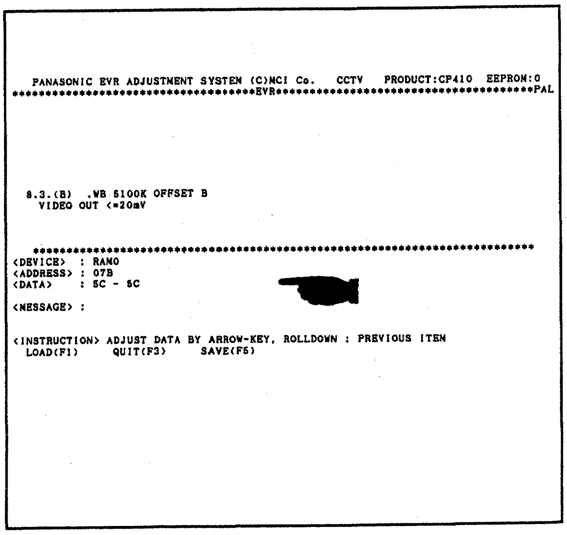
<MESSAGE> :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD(F1)     QUIT(F3)     SAVE(F5)
```

- Adjust data by **ARROW** keys so that vector position at the center of vectorscope.
- Press **ENTER** key.

8-3. (B) B White balance offset adjustment (5100°K)

Test Point : **VIDEO OUTPUT connector Rear board**
Adjust : **RAM (7B)**



```
  PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.    CCTV   PRODUCT:CP410  EEPROM:0
**************************************EVR****************************************PAL


 8.3.(B)  .WB 5100K OFFSET B
   VIDEO OUT <=20mV


   ****************************************************************************
<DEVICE>  : RAMO
<ADDRESS> : 07B
<DATA>    : 5C - 5C

<MESSAGE> :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD(F1)     QUIT(F3)     SAVE(F5)
```

- Adjust data by **ARROW** keys so that vector position at the center of vectorscope as shown in Fig. 5-13.
- Press **ENTER** key.

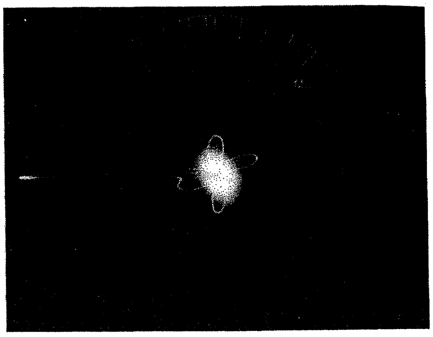


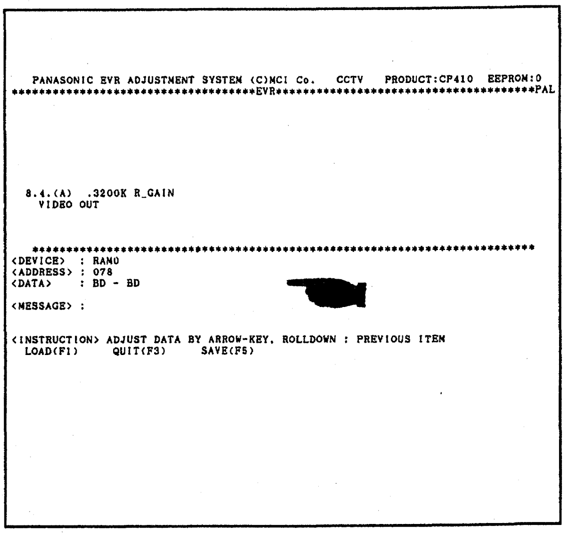
Fig. 5-13

8-4. White balance offset adjustment (3200°K)

Test Point : **VIDEO OUTPUT connector Rear board**
Adjust : **RAM (78)**
RAM (79)
RAM (76)

- Aim the camera at color chip chart.
- Set the ATW to ON positon.
- Set the gain of vectorscope 75% position.

8-4. (A) R. Gain adjustment



```
  PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.    CCTV   PRODUCT:CP410  EEPROM:0
**************************************EVR****************************************PAL


 8.4.(A)  .3200K R_GAIN
   VIDEO OUT

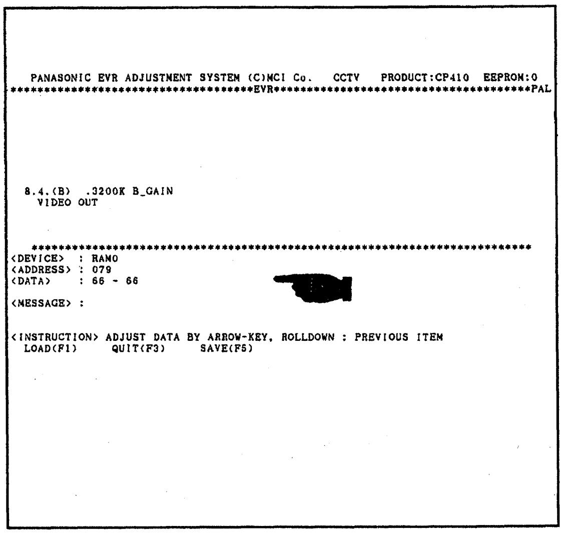

   ****************************************************************************
<DEVICE>  : RAMO
<ADDRESS> : 078
<DATA>    : BD - BD

<MESSAGE> :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD(F1)     QUIT(F3)     SAVE(F5)
```

- Adjust data by **ARROW** keys so that red gain becomes 220 ± 5% (Burst=100%).
- Press **ENTER** key.

8-4. (B) B. Gain adjustment



```
  PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.   CCTV   PRODUCT:CP410  EEPROM:0
************************************EVR****************************************PAL



 8.4.(B)  .3200K B_GAIN
   VIDEO OUT

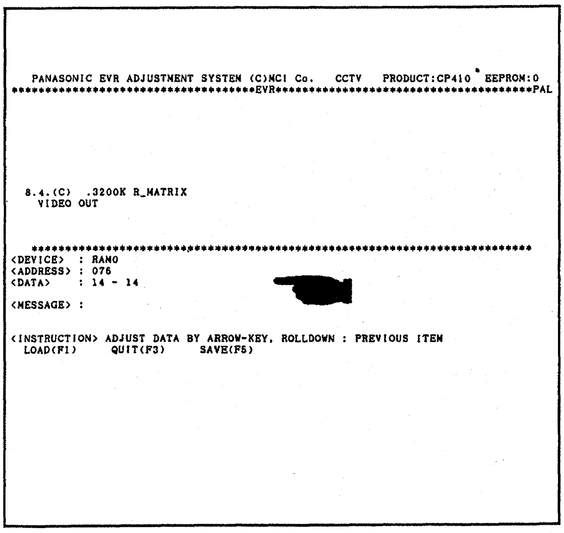

   ***************************************************************************
<DEVICE>  : RAM0
<ADDRESS> : 079
<DATA>    : 66 - 66

<MESSAGE> :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD(F1)     QUIT(F3)     SAVE(F5)
```

- Adjust data by **ARROW** keys so that yellow gain becomes 100 ± 5% (Burst=100%).
- Press **ENTER** key.

8-4. (C) R. Matrix Gain (3200°K)



```
  PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.   CCTV   PRODUCT:CP410  EEPROM:0
************************************EVR****************************************PAL



 8.4.(C)  .3200K R_MATRIX
   VIDEO OUT


   ***************************************************************************
<DEVICE>  : RAM0
<ADDRESS> : 076
<DATA>    : 14 - 14

<MESSAGE> :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD(F1)     QUIT(F3)     SAVE(F5)
```

- Adjust data by **ARROW** keys so that both red vector becomes coincident.
- Press **ENTER** key.
- If the chrominance phase and gain should not be adjusted to proper position, press PG DN 3 times to return to 8-4 (A), and repeat above procedure until they are adjusted to proper position as shown in table-1.

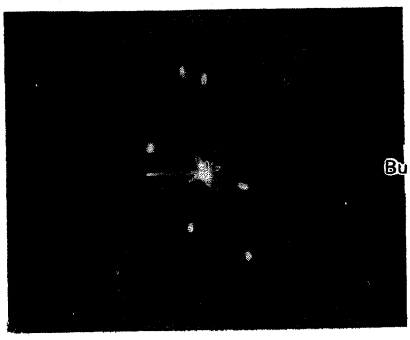


Fig. 5-14

	Red	Yellow
Phase	110±2°	160±5°
Gain	220±5%	100±5%

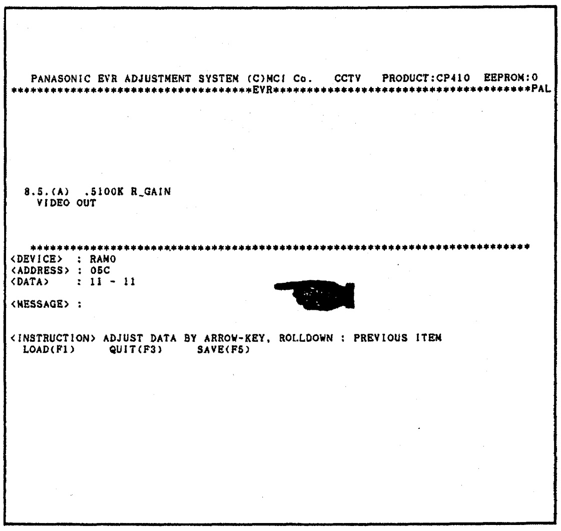
Table-1

8-5. White balance adjustment (5100°K)

Test Point : **VIDEO OUT connector** **Rear board**
Adjust : **RAM (5C)**
RAM (5E)

- Aim the camera at colour chip chart.

8-5. (A) R. Gain adjustment



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  PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.   CCTV   PRODUCT:CP410  EEPROM:0
************************************EVR****************************************PAL



 8.5.(A)  .5100K R_GAIN
   VIDEO OUT

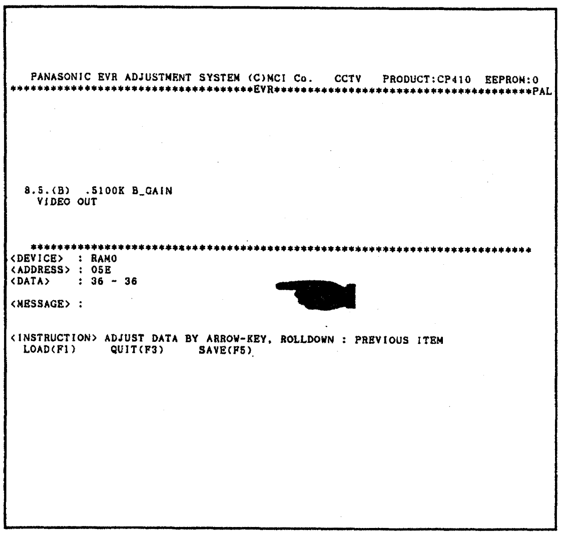

   ***************************************************************************
<DEVICE>  : RAM0
<ADDRESS> : 05C
<DATA>    : 11 - 11

<MESSAGE> :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD(F1)     QUIT(F3)     SAVE(F5)
```

- Adjust data by **ARROW** keys so that red gain becomes 220±5% (Burst=100%)
- Press **ENTER** key.

8-5. (B) B. Gain adjustment



```
   PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.    CCTV   PRODUCT:CP410  EEPROM:0
***************************************EVR*****************************************PAL



  8.5.(B)  .5100K B_GAIN
    VIDEO OUT


   ****************************************************************************
<DEVICE>  : RAM0
<ADDRESS> : 05E
<DATA>    : 36 - 36

<MESSAGE> :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD(F1)      QUIT(F3)      SAVE(F5)
```

- Adjust data by **ARROW** keys so that yellow gain becomes 100±5% (Burst=100%)
- Press **ENTER** key.
- If the chrominance gain and phase should not be adjusted to proper position, press PG DN key twice to return 8-5 (A), and repeat above procedure until they are adjusted to proper position as shown in table 2.

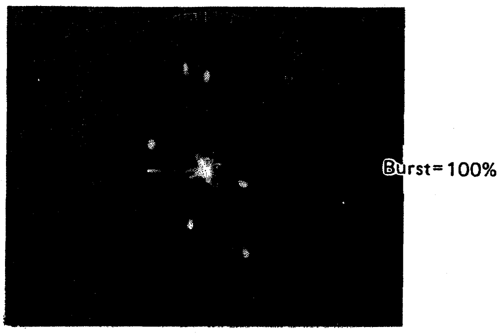


Fig. 5-15

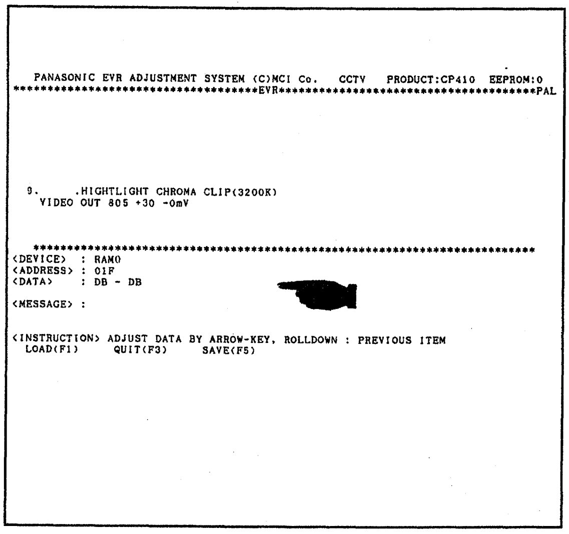
	Red	Yellow
Phase	110±2°	160±5°
Gain	220±5%	100±5%

Table-2

9. Highlight chroma clip

Test Point : VIDEO OUT connector Rear board
Adjust : RAM (1F)

- Aim the camera at white chart.
- turn the lens iris to fully open.



```
   PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co.    CCTV   PRODUCT:CP410  EEPROM:0
***************************************EVR*****************************************PAL



  9.      .HIGHTLIGHT CHROMA CLIP(3200K)
    VIDEO OUT 805 +30 -0mV


   ****************************************************************************
<DEVICE>  : RAM0
<ADDRESS> : 01F
<DATA>    : DB - DB

<MESSAGE> :

<INSTRUCTION> ADJUST DATA BY ARROW-KEY, ROLLDOWN : PREVIOUS ITEM
  LOAD(F1)      QUIT(F3)      SAVE(F5)
```

- Adjust data by **ARROW** keys so that Signal level becomes 805+30, -0 mV as shown in Fig.5-16.

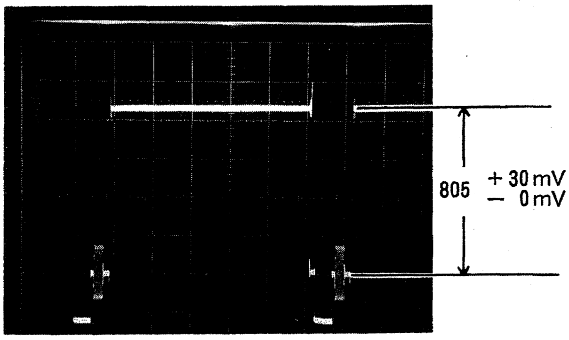


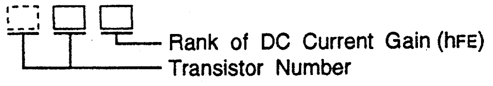
Fig. 5-16

- After finishing adjustment, press **QUIT (F3)**.
- Press **N** and **ENTER** to finish.
- Disconnect cable from CN3 on the drive board.

CHIP COMPONENTS

1. Chip Transistor

The transistor number is indicated on the top surface of the chip transistor using two alphabet letters or one numerical number and two alphabet letters.



Transistor Number

(Chip Transistor)

Letter	Transistor No.	Letter	Transistor No.
A	2SB709	X	2SD602A
B	2SB709A	Y	2SD601
C	2SB710	Z	2SD601A
D	2SB710A	1A	2SB799
E	2SA1022	1B	2SB814
F	2SA1034	1C	2SB902
H	2SA1035	1F	2SK321
I	2SB792	1K	2SK316
K	2SC2778	1L	2SK247
P	2SD814	1M	2SJ84
Q	2SD813	1N	2SK199
R	2SC2480	1O	2SK198
S	2SC2405	1T	2SC3077
T	2SC2406	1X	2SC2845
U	2SC2404	1Z	2SD1030
V	2SC2295	2B	2SK374
W	2SD602	2C	2SK116
BQ	2SB766A	UMT	2SC4081

(Small Chip Transistor)

Letter	Transistor No.
A	2SB1218
B	2SB1218A
D	2SB1219A
U	2SC3931
W	2SD1820
X	2SD1820A
Y	2SD1819
E3	2SA1226
OS	2SB1219
UC	2SA1532
YU	2SC3938

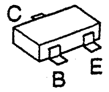
(Pair Transistor)

Letter	Transistor No.	Letter	Transistor No.
5R	XN1501	5H	XP4501
7S	XN1601	5C	XP4601
5H	XN4501	5H	XP4501
5C	XN4601	5L	XP5501
5L	XN5501	4N	XP5601
4N	XN5601	7S	XP6501
5N	XN6501	7W	XP6435
7W	XN6435	7F	XP6534
7F	XN6534	X1	UMX1
5R	XP1501	Z1	UMZ1
7S	XP1601		

Example:
WQ → 2SD602-Q
YQ → 2SD601-Q
1BS → 2SB814-S

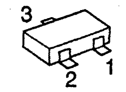
Appearance and Symbols

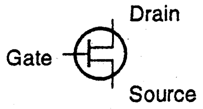
Transistor



C: Collector
B: Bass
E: Emitter

FET

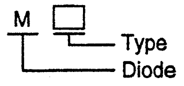




	1	2	3
Eacept 2SK199	Drain	Source	Gate
2SK199	Gate	Drain	Source

2. Chip Diode

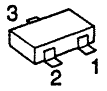
The diode number is indicated on the top surface of the chip diode using two alphabet letters.

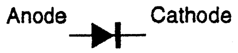


Diode Number

	1	2	3
MA28/MA28W/MA28T	–	Anode	Cathode
MA151K/MA152K	–	Anode	Cathode
MA151A/MA152A	–	Cathode	Anode
MA151WK/MA152WK	Anode	Anode	Cathode
MA151WA/MA152WA	Cathode	Cathode	Anode
MA153	Cathode	Anode	Common
MA141K	–	Anode	Cathode
MA143	Anode	Cathode	Common
MA3062	Anode	–	Cathode
RD421D	Anode	–	Cathode

Appearance and Symbol

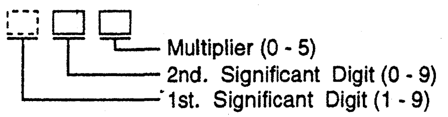




	1	2	3
MA28/MA28W/MA28T	–	Anode	Cathode
MA151K/MA152K	–	Anode	Cathode
MA151A/MA152A	–	Cathode	Anode
MA151WK/MA152WK	Anode	Anode	Cathode
MA151WA/MA152WA	Cathode	Cathode	Anode
MA153	Cathode	Anode	Common
MA141K	–	Anode	Cathode
MA143	Anode	Cathode	Common
MA3062	Anode	–	Cathode
RD421D	Anode	–	Cathode

3. Chip Resistor

The resistor value is indicated on the bottom surface of the chip resistor using three digit numbers.


Multiplier (0 - 5)
2nd. Significant Digit (0 - 9)
1st. Significant Digit (1 - 9)

Example:
330 → $33 \times 10^0 = 33\ \Omega$
561 → $56 \times 10^1 = 560\ \Omega$
123 → $12 \times 10^3 = 12\ k\Omega$

Note: Zero ohm resistor (jumper chip) is colored red or green.

4. Chip Capacitor

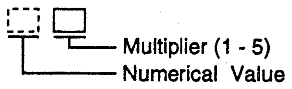
The capacitive value of replacement chip capacitors is indicated on the bottom surface. original parts do not have value indication.

If the capacitive value is less than 100 pF, the value will be indicated by one or two digit number expressing the capacity directly in pF.

Example:

0.5 → 0.5 pF   2.5 → 2.5 pF
.75 → 0.75 pF   33 → 33 pF
1 → 1 pF   82 → 82 pF

If the capacitive value is 100 pF or greater, the value will be indicated by an alpha-numeric code. The letter precedes the number and expresses a numerical value to be multiplied by the number which follows.


Multiplier (1 - 5)
Numerical Value

Numerical Value

Letter	Value	Letter	Value
A	10	N	33
B	11	P	36
C	12	Q	39
D	13	R	43
E	15	S	47
F	16	T	51
G	18	U	56
H	20	V	62
J	22	W	68
K	24	X	75
L	27	Y	82
M	30	Z	91

* Letters I and O are not used.

Example: A1 → 10×10^1 = 100 pF
N2 → 33×10^2 = 3300 pF
S3 → 47×10^3 = 47000 pF

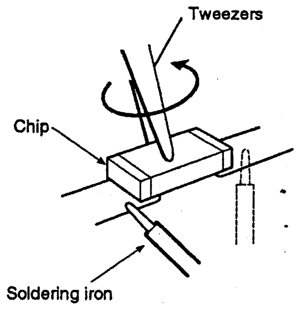
5. Precautions in replacing the chip component

1. Make sure that the unit is turned OFF when replacing the chip.
2. Use tweezers to prevent any damage to the chip surface.
3. Do not re-use the chips after removal.
4. Do not rub the electrode of chips.
5. Do not subject the chips to excessive stress.
6. It is recommended that a pencil-type soldering iron to be used.
7. The solder whose diameter is less than 0.5 mm is recommended.
8. Do not heat the chip beyond 3 second.
9. Maintain temperature control under 260°C (500°F) when soldering.

5-1 Removal (Transistor, Diode, Resistor and Capacitor)

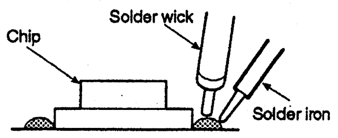
1. Add the solder to both ends of the chip (three leads for chip transistor).
2. While attaching the sokdering iron to both ends of the chip (three leads for chip transistor) as shown below, remove the chip by turning with tweezers.

Note: Be careful not to damage other chips.

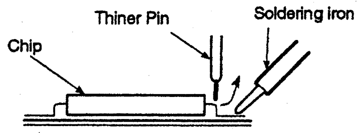

Tweezers
Chip
Soldering iron

5-2 Removal (IC)

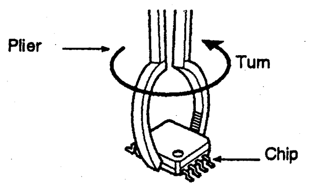
1. Add the solder wick and soldering iron to each lead of the IC and remove solder.


Solder wick
Chip
Solder iron

2. Add the soldering iron to each lead of the IC and left each lead of the IC using thiner pin.

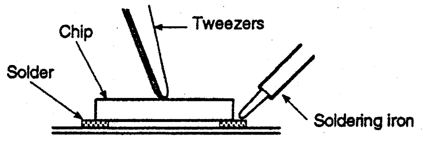

Thiner Pin
Soldering iron
Chip

3. Remove IC turning it with plier.

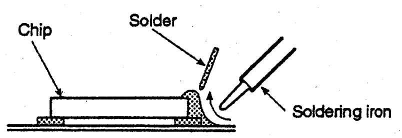

Plier
Turn
Chip

5-3 Mounting

1. Place the solder thinly on the chip mounting foil.
2. Solder the chip temporarily while holding the chip with the tweezers.

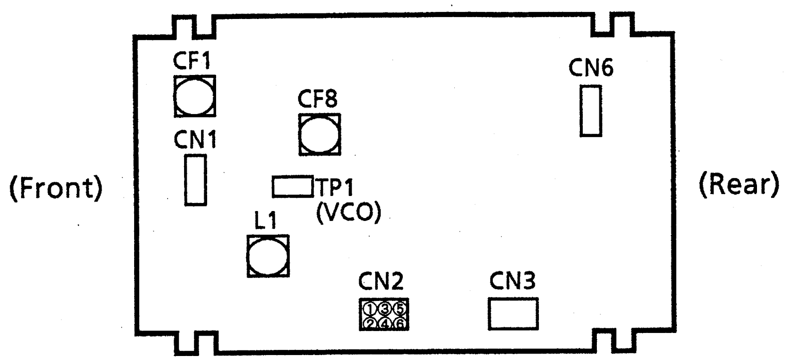

Chip
Tweezers
Solder
Soldering iron

3. Solder both ends of chip (three leads for chip transistor).

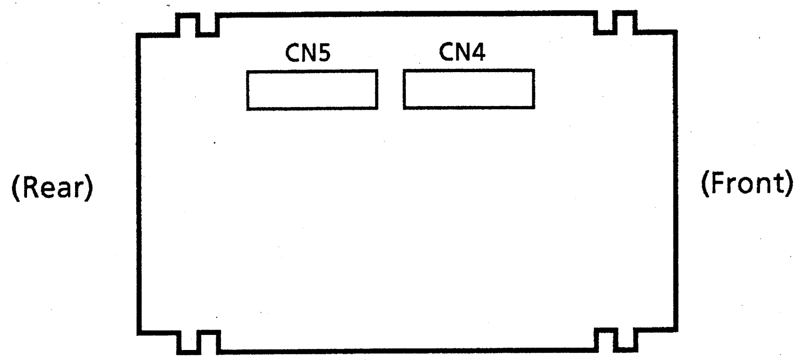

Chip
Solder
Soldering iron

LOCATION OF TEST POINTS AND ADJUSTING CONTROL

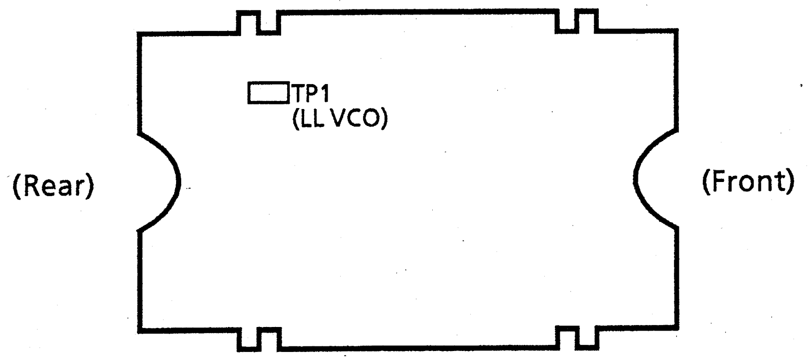
Drive Board (Component side)


(Front)
CF1
CN1
CF8
TP1
(VCO)
L1
CN2
CN3
CN6
(Rear)

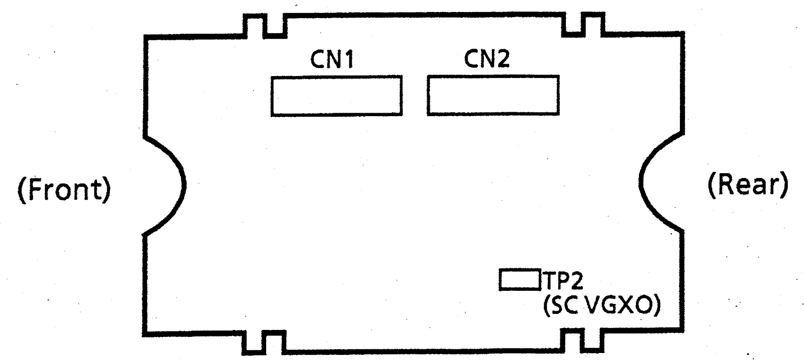
Drive Board (Pattern side)


(Rear)
CN5
CN4
(Front)

Digital Board (Component side)

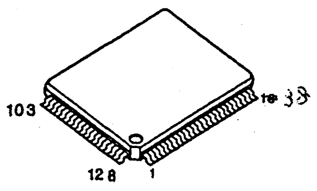

(Rear)
TP1
(LL VCO)
(Front)

Digital Board (Pattern side)


(Front)
CN1
CN2
TP2
(SC VGXO)
(Rear)

APPEARANCE OF IC, TRANSISTOR AND DIODE

YWCF45107PGJ



MN67321
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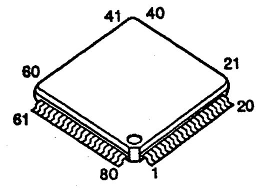
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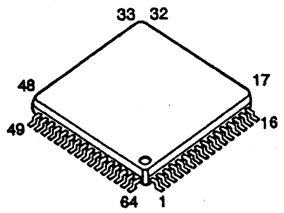
60
21
61
20
80
1

YWCXD2404R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32
48
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49
16
64
1

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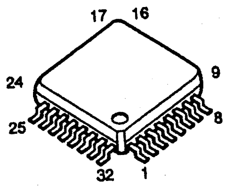
MN6576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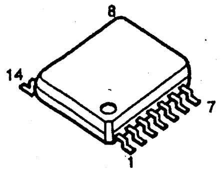

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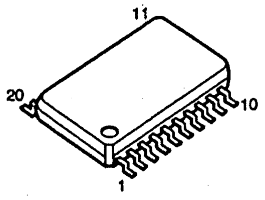

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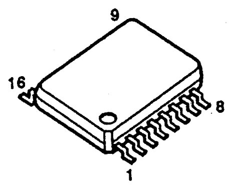

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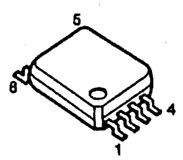

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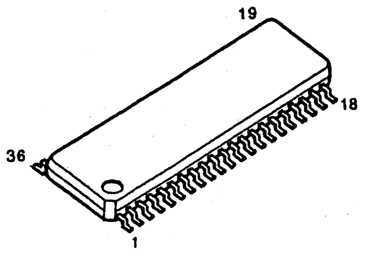

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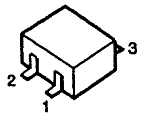

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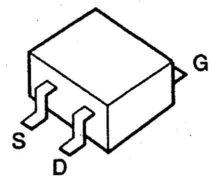
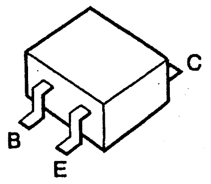


2SC4617 2SA1774
2SC4619 2SC2412-QRS
2SB766A 2SD1819-QRS
2SB1218



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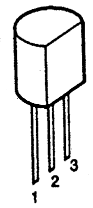
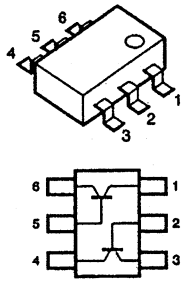


UMZ1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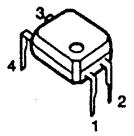

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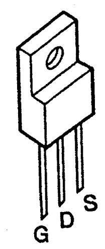
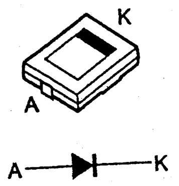


MA112
YWHVU359TRF



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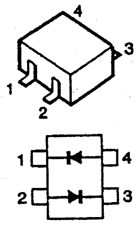
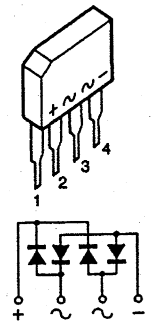


S1VB60



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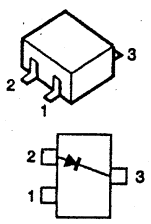
YWDA221
YWDAN217



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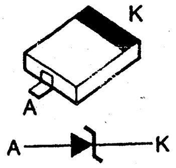
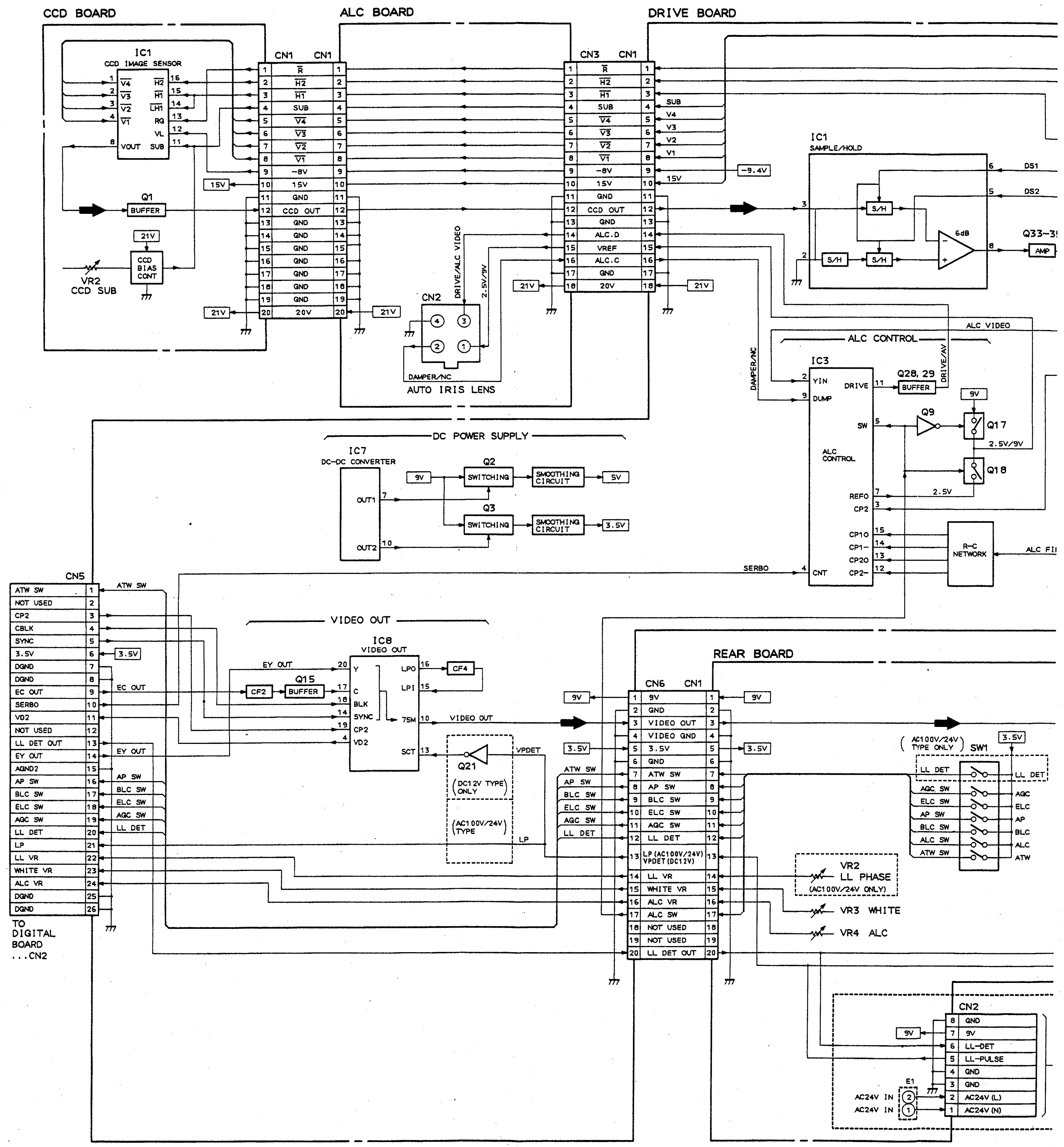
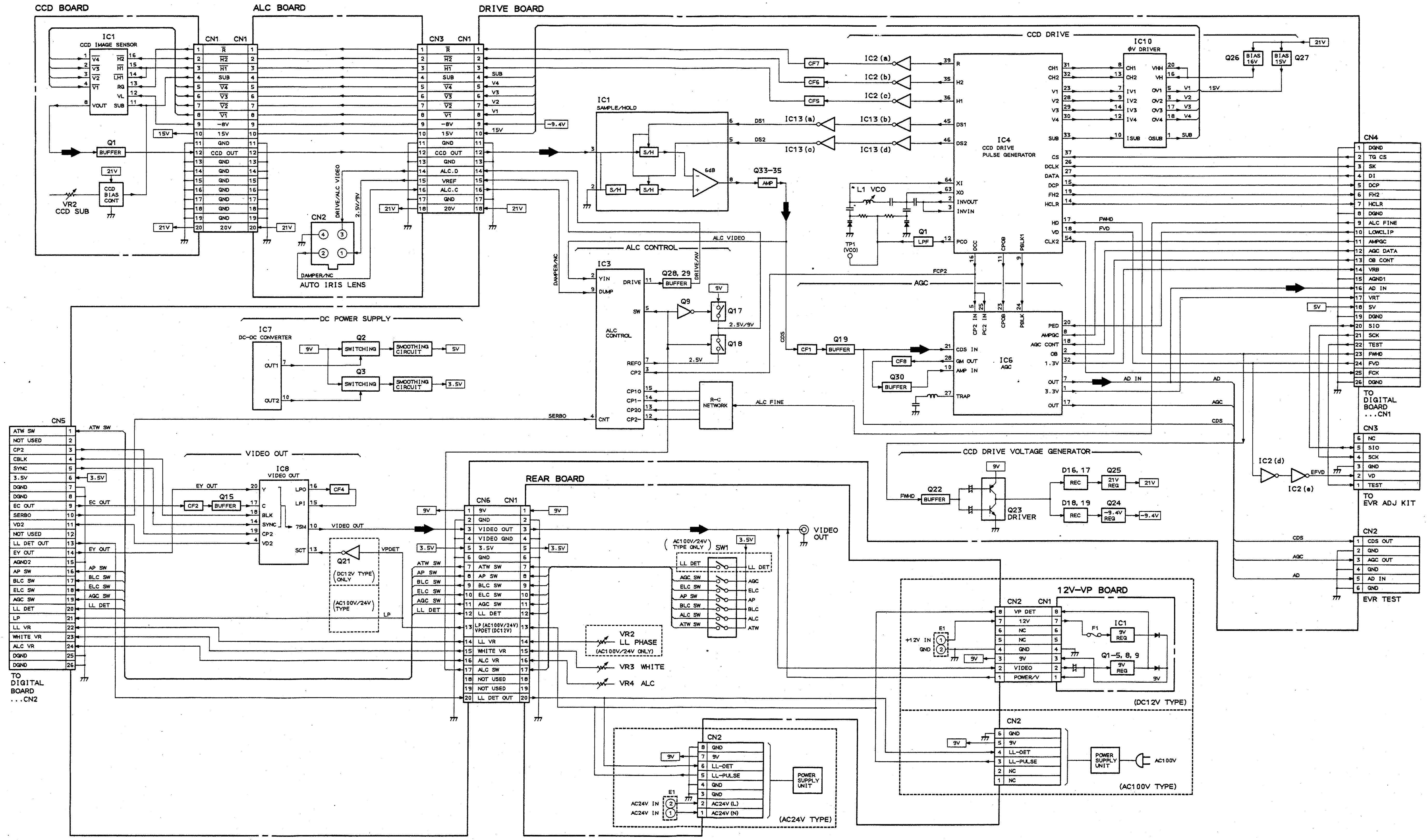
YWSC80209R
MA8100
MA8220
YWDTZ5.1



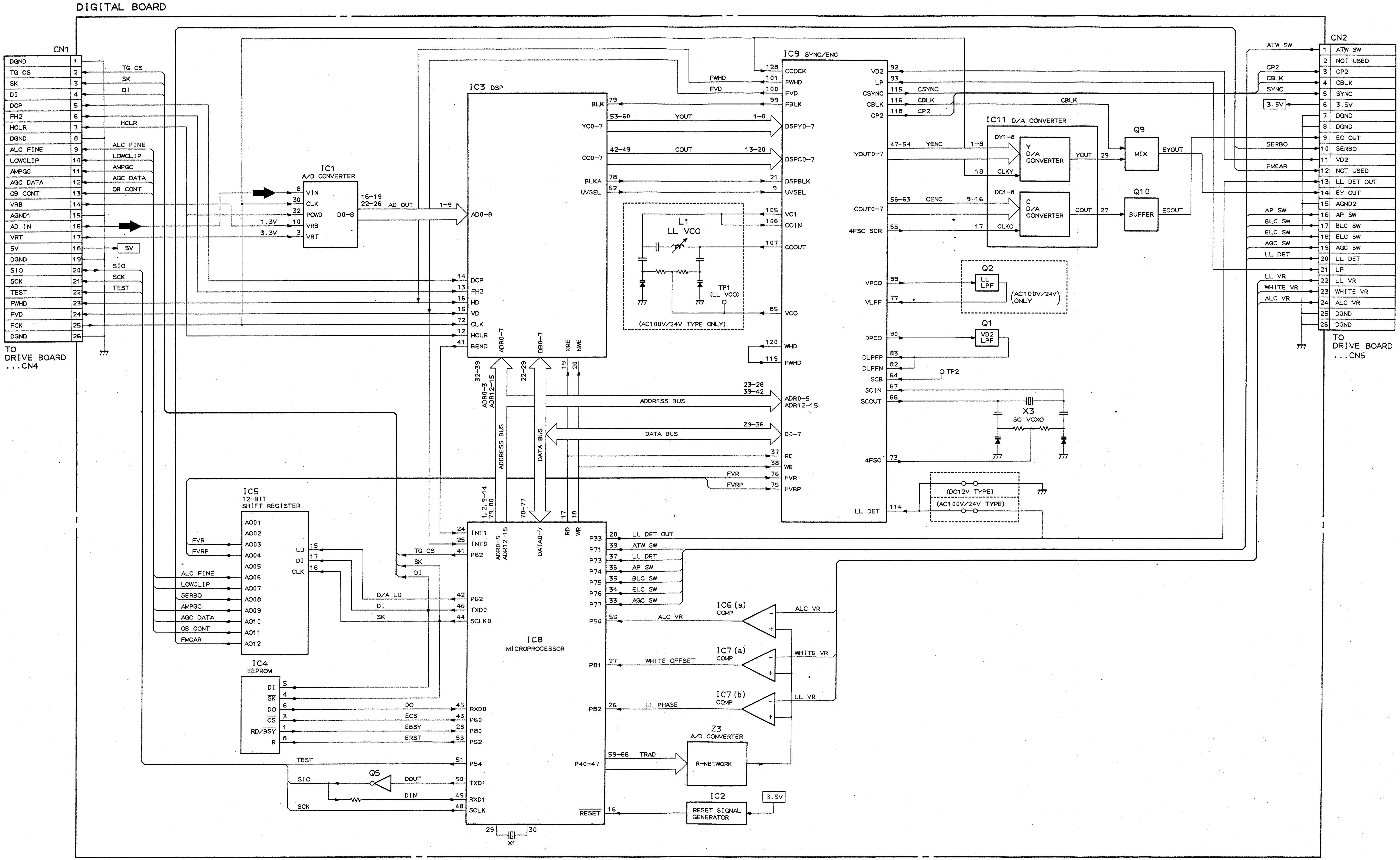
CONDUCTOR VIEW OF DRI


CCD BOARD
ALC BOARD
DRIVE BOARD
IC1
CCD IMAGE SENSOR
V4
V3
V2
V1
VOUT
SUB
H2
H1
LH1
RG
VL
Q1
BUFFER
21V
CCD BIAS CONT
VR2
CCD SUB
15V
CN1
CN1
R
H2
H1
SUB
V4
V3
V2
V1
−8V
15V
GND
CCD OUT
GND
20V
21V
CN2
DRIVE/ALC VIDEO
2.5V/9V
DAMPER/NC
AUTO IRIS LENS
CN3
CN1
ALC.D
VREF
ALC.C
−9.4V
IC1
SAMPLE/HOLD
S/H
6dB
DS1
DS2
Q33-3
AMP
ALC VIDEO
ALC CONTROL
IC3
VIN
DUMP
DRIVE
SW
ALC CONTROL
REFO
CP2
CP10
CP1−
CP20
CP2−
CNT
Q28, 29
BUFFER
9V
Q9
Q17
Q18
2.5V/9V
2.5V
R-C NETWORK
ALC FI
SERBO
DC POWER SUPPLY
IC7
DC-DC CONVERTER
OUT1
OUT2
9V
Q2
SWITCHING
SMOOTHING CIRCUIT
5V
Q3
3.5V
CN5
ATW SW
NOT USED
CP2
CBLK
SYNC
3.5V
DGND
EC OUT
SERBO
VD2
LL DET OUT
EY OUT
AGND2
AP SW
BLC SW
ELC SW
AGC SW
LL DET
LP
LL VR
WHITE VR
ALC VR
TO DIGITAL BOARD ...CN2
VIDEO OUT
IC8
VIDEO OUT
EY OUT
Q15
CF2
BUFFER
Y
C
BLK
SYNC
CP2
VD2
LPO
LPI
75M
SCT
CF4
VIDEO OUT
VPDET
Q21
(DC12V TYPE ONLY)
(AC100V/24V TYPE)
LP
REAR BOARD
CN6
CN1
9V
GND
VIDEO OUT
VIDEO GND
3.5V
ATW SW
AP SW
BLC SW
ELC SW
AGC SW
LL DET
LP (AC100V/24V) VPDET (DC12V)
LL VR
WHITE VR
ALC VR
ALC SW
NOT USED
LL DET OUT
(AC100V/24V TYPE ONLY)
SW1
LL DET
AGC
ELC
AP
BLC
ALC
ATW
VR2
LL PHASE
(AC100V/24V ONLY)
VR3 WHITE
VR4 ALC
CN2
GND
9V
LL-DET
LL-PULSE
AC24V (L)
AC24V (N)
E1
AC24V IN
AC24V IN

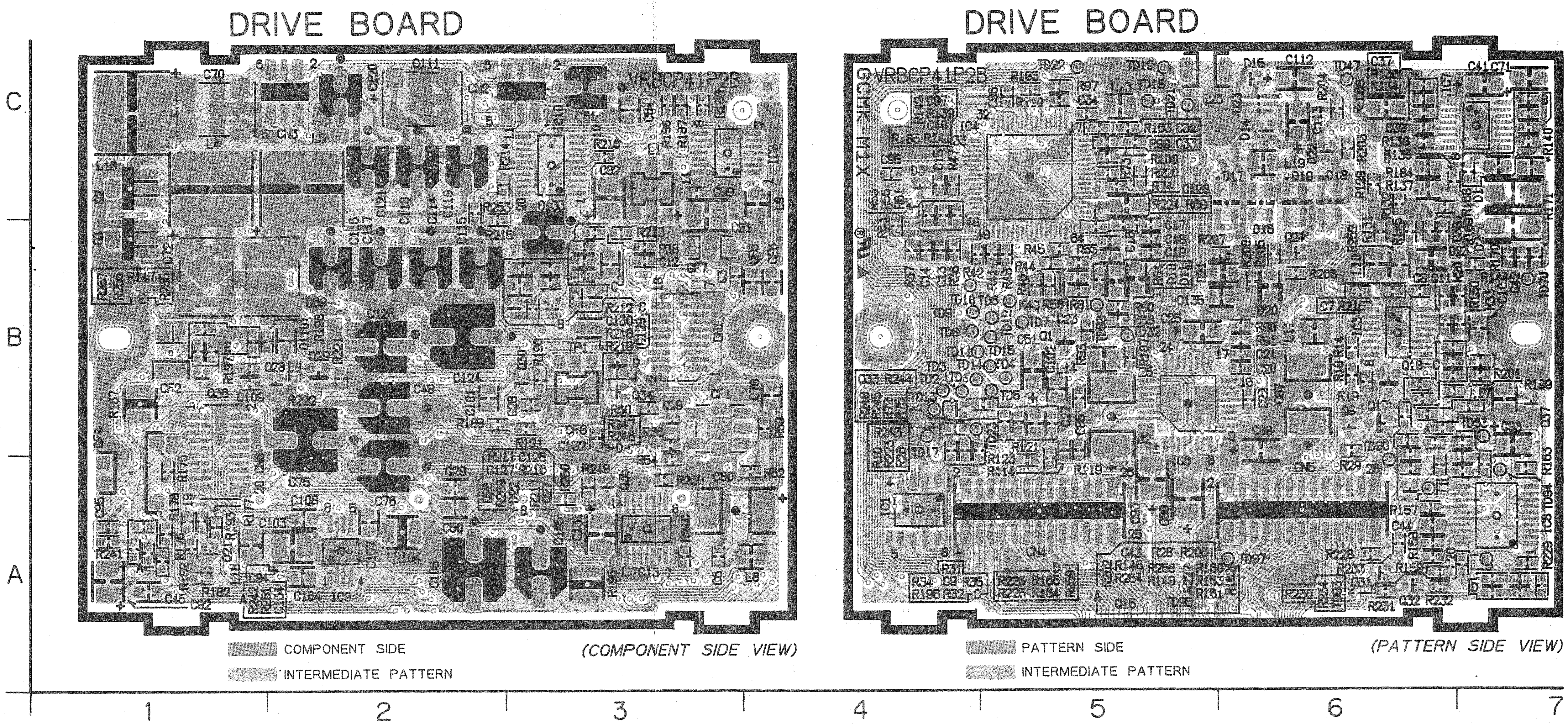
CONDUCTOR VIEW OF DRIVE BOARD


CCD BOARD
ALC BOARD
DRIVE BOARD
IC1 CCD IMAGE SENSOR
Q1 BUFFER
CCD BIAS CONT
VR2 CCD SUB
CN1
CN3
CN2
AUTO IRIS LENS
DAMPER/NC
DRIVE/ALC VIDEO
IC1 SAMPLE/HOLD
S/H
6dB
Q33-35 AMP
CCD DRIVE
IC2 (a)
IC2 (b)
IC2 (c)
IC13 (a)
IC13 (b)
IC13 (c)
IC13 (d)
CF7
CF6
CF5
IC4 CCD DRIVE PULSE GENERATOR
IC10 ΦV DRIVER
Q26 BIAS 16V
BIAS 15V Q27
L1 VCO
TP1 (VCO)
Q1 LPF
ALC CONTROL
IC3
ALC CONTROL
Q28, 29 BUFFER
Q9
Q17
Q18
R-C NETWORK
ALC FINE
ALC VIDEO
AGC
IC6 AGC
Q19 BUFFER
CF1
CF8
Q30 BUFFER
AD IN
DC POWER SUPPLY
IC7 DC-DC CONVERTER
Q2 SWITCHING
Q3 SWITCHING
SMOOTHING CIRCUIT
VIDEO OUT
IC8 VIDEO OUT
Q15 BUFFER
CF2
CF4
Q21
(DC12V TYPE) ONLY
(AC100V/24V) TYPE
CN5
TO DIGITAL BOARD ...CN2
CN4
TO DIGITAL BOARD ...CN1
CN3
TO EVR ADJ KIT
CN2
EVR TEST
CCD DRIVE VOLTAGE GENERATOR
Q22 BUFFER
Q23 DRIVER
D16, 17 REC
Q25 21V REG
D18, 19 REC
Q24 -9.4V REG
IC2 (d)
IC2 (e)
REAR BOARD
CN6 CN1
VIDEO OUT
(AC100V/24V TYPE ONLY) SW1
VR2 LL PHASE (AC100V/24V ONLY)
VR3 WHITE
VR4 ALC
12V-VP BOARD
CN2 CN1
E1
F1
IC1 9V REG
Q1-5, 8, 9 9V REG
(DC12V TYPE)
POWER SUPPLY UNIT
AC100V
(AC100V TYPE)
AC24V IN
(AC24V TYPE)

BLOCK DIAGRAM OF DIGITAL BOARD


DIGITAL BOARD
CN1
1 DGND
2 TG CS
3 SK
4 DI
5 DCP
6 FH2
7 HCLR
8 DGND
9 ALC FINE
10 LOWCLIP
11 AMPGC
12 AGC DATA
13 OB CONT
14 VRB
15 AGND1
16 AD IN
17 VRT
18 5V
19 DGND
20 SIO
21 SCK
22 TEST
23 FWHD
24 FVD
25 FCK
26 DGND
TO DRIVE BOARD ...CN4
5V
IC1 A/D CONVERTER
VIN CLK PCWD VRB VRT D0-8
1.3V
3.3V
16-19 22-26 AD OUT
IC3 DSP
AD0-8 DCP FH2 HD VD CLK HCLR BEND
BLK Y00-7 C00-7 BLKA UVSEL
ADR0-7 DB0-7 NRE NWE
YOUT
COUT
ADDRESS BUS
DATA BUS
L1 LL VCO
TP1 (LL VCO)
(AC100V/24V TYPE ONLY)
IC9 SYNC/ENC
CCDCK FWHD FVD FBLK DSPY0-7 DSPC0-7 DSPBLK UVSEL VC1 COIN COOUT VCO WHD PWHD ADR0-5 ADR12-15 D0-7 RE WE FVR FVRP
VD2 LP CSYNC CBLK CP2 YOUT0-7 COUT0-7 4FSC SCR VPCO VLPF DPCO DLPFP DLPFN SCB SCIN SCOUT 4FSC LL DET
CSYNC CBLK CP2 YENC CENC
IC11 D/A CONVERTER
DY1-8 Y D/A CONVERTER CLKY YOUT
DC1-8 C D/A CONVERTER CLKC COUT
Q9 MIX EYOUT
Q10 BUFFER ECOUT
Q2 LL LPF (AC100V/24V) ONLY
Q1 VD2 LPF
TP2
X3 SC VCXO
(DC12V TYPE)
(AC100V/24V TYPE)
IC5 12-BIT SHIFT REGISTER
AO01 AO02 AO03 AO04 AO05 AO06 AO07 AO08 AO09 AO10 AO11 AO12 LD DI CLK
FVR FVRP ALC FINE LOWCLIP SERBO AMPGC AGC DATA OB CONT FMCAR
IC4 EEPROM
DI SK DO CS RD/BSY R
DO ECS EBSY ERST
TEST SIO SCK
Q5 DOUT DIN
IC8 MICROPROCESSOR
INT1 INT0 P62 P62 TXD0 SCLK0 RXD0 P60 P80 P52 P54 TXD1 RXD1 SCLK
ADR0-5 ADR12-15 DATA0-7 RD WR
P33 P71 P73 P74 P75 P76 P77 P50 P81 P82 P40-47 RESET
TG CS SK DI D/A LD DI SK
LL DET OUT ATW SW LL DET AP SW BLC SW ELC SW AGC SW
ALC VR WHITE OFFSET LL PHASE TRAD
IC6 (a) COMP
IC7 (a) COMP
IC7 (b) COMP
ALC VR WHITE VR LL VR
Z3 A/D CONVERTER R-NETWORK
IC2 RESET SIGNAL GENERATOR
3.5V
X1
CN2
1 ATW SW
2 NOT USED
3 CP2
4 CBLK
5 SYNC
6 3.5V
7 DGND
8 DGND
9 EC OUT
10 SERBO
11 VD2
12 NOT USED
13 LL DET OUT
14 EY OUT
15 AGND2
16 AP SW
17 BLC SW
18 ELC SW
19 AGC SW
20 LL DET
21 LP
22 LL VR
23 WHITE VR
24 ALC VR
25 DGND
26 DGND
TO DRIVE BOARD ...CN5
ATW SW CP2 CBLK SYNC 3.5V SERBO FMCAR AP SW BLC SW ELC SW AGC SW LL DET LL VR WHITE VR ALC VR

CONDUCTOR VIEW OF DRIVE BOARD


DRIVE BOARD
DRIVE BOARD
VRBCP41P2B
C
B
A
1
2
3
4
5
6
7
COMPONENT SIDE
INTERMEDIATE PATTERN
(COMPONENT SIDE VIEW)
PATTERN SIDE
INTERMEDIATE PATTERN
(PATTERN SIDE VIEW)

<Voltages>

DRIVE BOARD

	IC6
Pin 1	3.5
2	0
3	0
4	0
5	0
6	3.4
7	1.8
8	3.3
9	0
10	0
11	-0.4
12	1.9
13	0
14	1.9
15	0
16	2.0
17	1.9
18	0
19	0
20	2.0
21	0.1
22	0
23	0.2
24	0.1
25	0
26	0
27	2.0
28	2.4
29	1.9
30	5.0
31	1.9
32	1.4

	IC1	IC2	IC3	IC7	IC8	IC10	IC13
Pin 1	1.8	2.6	0	1.6	2.0	-8.5	0
2	0	0	3.2	1.2	2.0	-8.5	5.0
3	2.9	1.3	0.1	1.3	0	0	0.8
4	5.0	2.6	1.3	1.3	3.5	0	3.7
5	1.3	0	0.2	1.7	0	-2.7	3.7
6	1.3	0	2.2	0.6	0	3.5	1.2
7	0	0	2.5	5.8	2.4	0	0
8	1.8	0.2	8.7	0	0	3.4	1.2
9		4.8	2.4	8.6	0	0	3.7
10		4.8	5.0	7.2	2.0	3.4	3.7
11		0.2	2.6	0.7	0	0	0.8
12		0	0	1.8	2.0	3.2	0
13		5.0	0	1.3	2.0	0	5.0
14		5.0	0	0	3.2	3.2	5.0
15			2.4	0	2.2	0	
16			2.4	1.3	2.4	16.6	
17					2.0	-8.1	
18					0.9	-8.1	
19					0.1	0	
20					3.0	16.6	

	B	C	E
Q1	0.1	1.2	3.4
9	0.2	8.7	0
15	2.0	5.0	1.5
17	8.6	2.4	8.7
18	1.9	2.4	2.4
24	-9.6	-12.6	-9.0
26	17.2	21.0	16.6
27	16.2	21.0	15.6
28	2.4	0	3.5
29	3.1	5.0	2.5
30	2.0	4.9	1.5
33	1.8	2.9	1.1
34	1.6	2.1	0.9
35	2.1	4.9	1.5

<Index>

DRIVE BOARD

IC1	A4	Q19	B3	D3	C4
IC2	C3	Q22	C6	D10	B5
IC3	B6	Q23	C6	D11	B5
IC4	C5	Q24	B6	D14	C6
IC6	B5	Q26	B3	D15	C6
IC7	C7	Q27	B3	D16	C6
IC8	A7	Q28	B2	D17	C6
IC10	C3	Q29	B2	D18	C6
IC13	A3	Q30	B3	D19	C6
		Q33	B4	D20	B6
Q1	B5	Q34	B3	D22	B3
Q2	C1	Q35	A3	D23	B6
Q3	B1	Q36	B1		
Q9	B6	Q37	B7		
Q15	A6				
Q17	B6	D1	C7		
Q18	B6	D2	B7		

SCHEMATIC DIAGRAM OF DRIVE BOARD

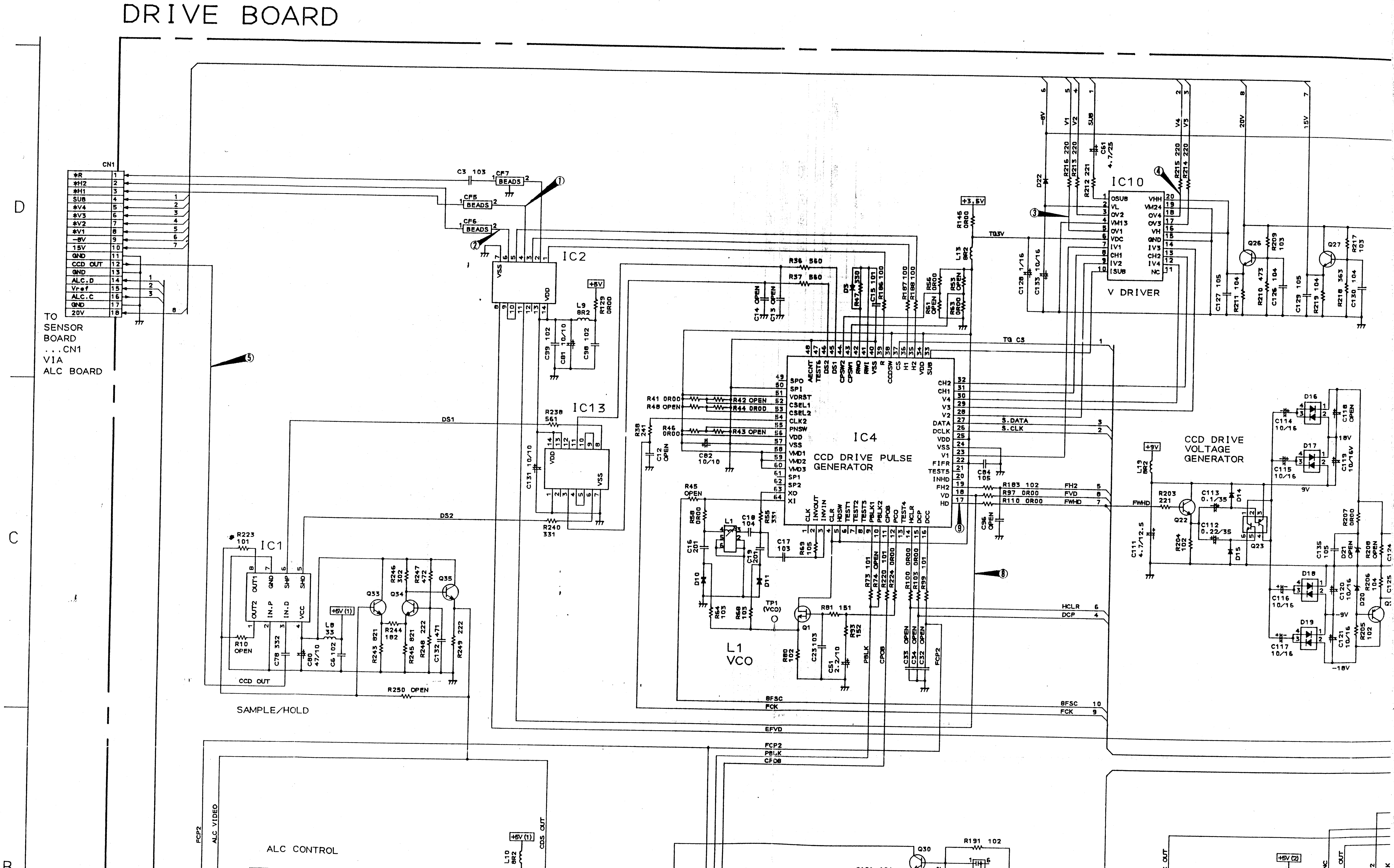
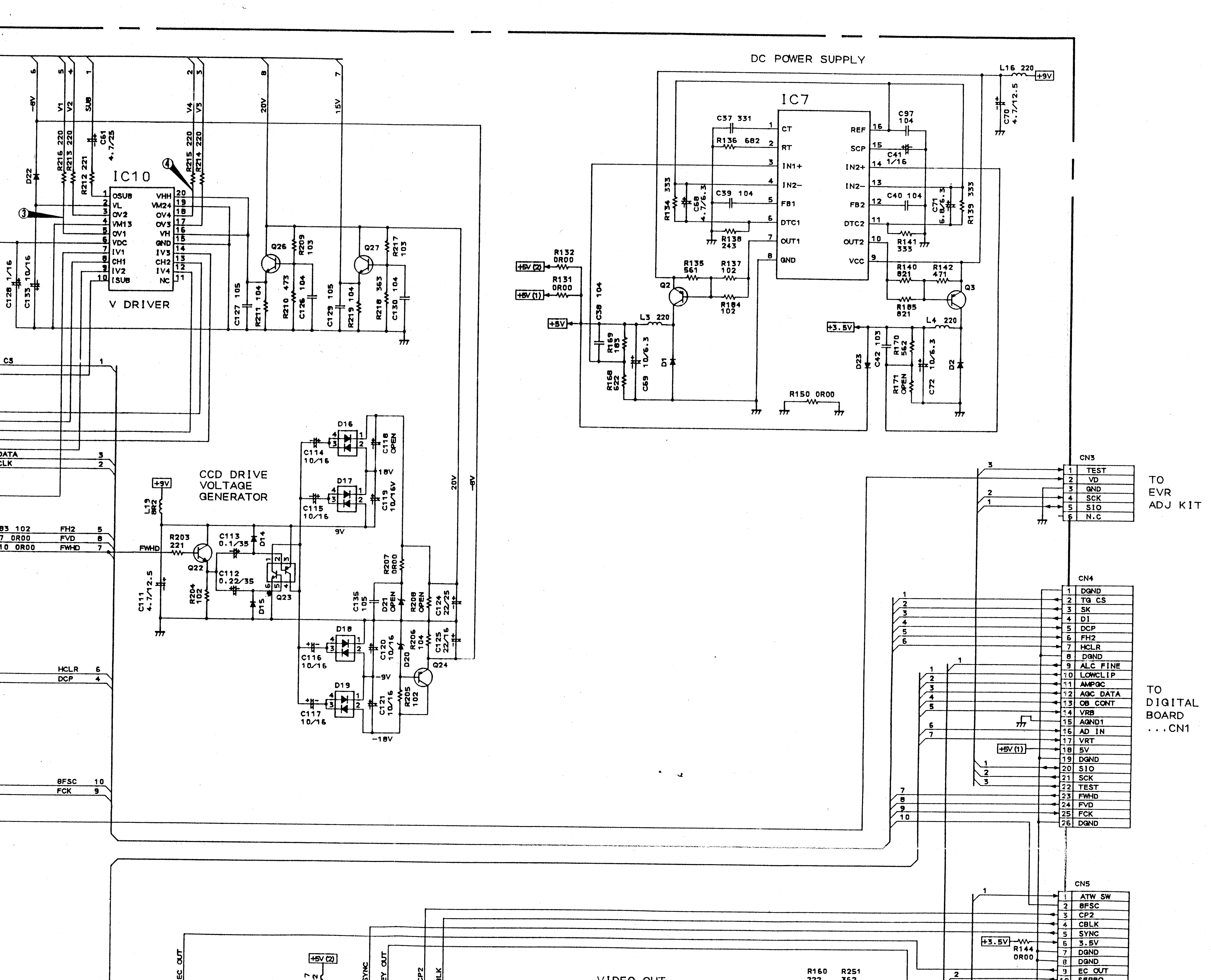
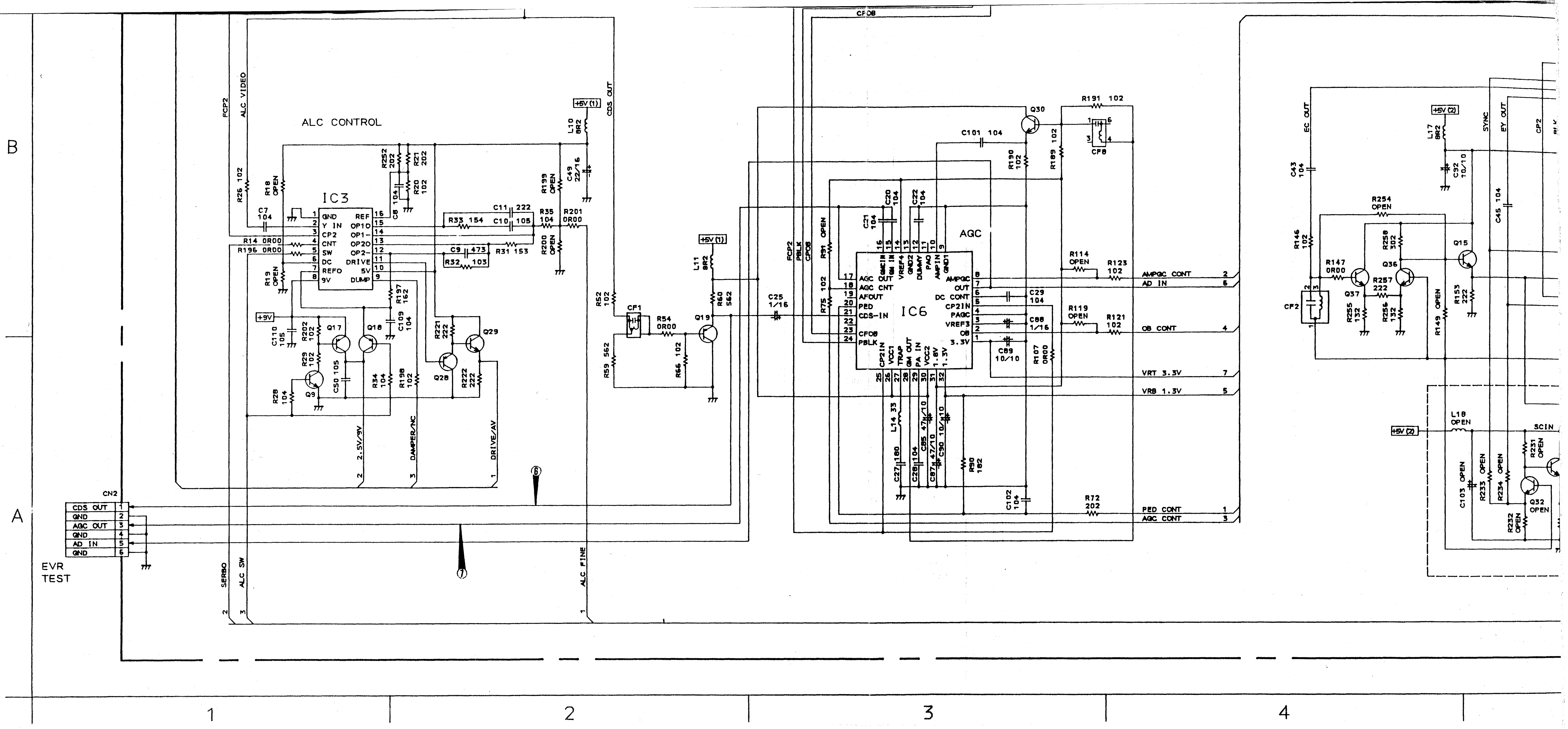

DRIVE BOARD
D
C
B
CN1
*R
*H2
*H1
SUB
*V4
*V3
*V2
*V1
-8V
15V
GND
CCD OUT
GND
ALC.D
Vref
ALC.C
GND
20V
TO SENSOR BOARD ...CN1 VIA ALC BOARD
C3 103
CF7 BEADS
CF5 BEADS
CF6 BEADS
IC2
VSS
VDD
+5V
R129 0R00
L9 8R2
C99 102
C81 10/10
C98 102
IC13
R238 561
R240 331
C131 10/10
DS1
DS2
IC1
R223 101
OUT1
GND
SHP
SHD
OUT2
IN.P
IN.D
VCC
R10 OPEN
C78 332
C80 47/10
L8 33
C6 102
+5V (1)
Q33
Q34
Q35
R246 302
R247 472
R244 182
R243 821
R245 821
R248 222
C132 471
R249 222
CCD OUT
R250 OPEN
SAMPLE/HOLD
IC4
CCD DRIVE PULSE GENERATOR
SPO
SPI
VDRST
CSEL1
CSEL2
CLK2
PNSW
VDD
VSS
VMD1
VMD2
VMD3
SP1
SP2
XO
XI
AECNT
TEST6
DS2
DS1
CPSW2
CPSW1
RWO
RW1
VSS
R
CCDSW
CS
H1
H2
VDD
SUB
CH2
CH1
V4
V3
V2
DATA
DCLK
V1
FIFR
TEST5
INHD
FH2
VD
HD
CLK
INVOUT
INVIN
CLR
MDSW
TEST1
TEST2
TEST3
PBLK1
PBLK2
CPOB
PCO
TEST4
HCLR
DCP
DCC
R41 0R00
R48 OPEN
R42 OPEN
R44 0R00
R46 0R00
R43 OPEN
R38 241
C12 OPEN
C82 10/10
R36 560
R37 560
C14 OPEN
C13 OPEN
D3
R47 330
C15 101
R186 100
R187 100
R188 100
R56 0R00
R55 OPEN
R61 OPEN
R63 0R00
R146 0R00
L13 8R2
+3.5V
TG3V
TG CS
S.DATA
S.CLK
C84 105
R183 102
R97 0R00
R110 0R00
FH2
FVD
FWHD
C96 OPEN
R45 OPEN
R58 0R00
C16 201
L1
C18 104
R55 331
C19 201
C17 103
R69 105
D10
D11
R64 103
R68 103
TP1 (VCO)
Q1
R81 151
R80 102
C23 103
R93 152
C51 2.2/10
L1 VCO
R73 101
R74 OPEN
R220 101
R224 0R00
R100 0R00
R103 0R00
R99 101
C33 OPEN
C34 OPEN
C32 OPEN
PBLK
CPOB
FCP2
HCLR
DCP
8FSC
FCK
EFVD
FCP2
PBLK
CPOB
IC10
V DRIVER
OSUB
VL
OV2
VM13
OV1
VDC
IV1
CH1
IV2
ISUB
VHH
VM24
OV4
OV3
VH
GND
IV3
CH2
IV4
NC
-8V
V1
V2
SUB
V4
V3
20V
15V
D22
R216 220
R213 220
R212 221
C61 4.7/25
R215 220
R214 220
C128 1/16
C133 10/16
C127 105
R211 104
Q26
R209 103
R210 473
C126 104
C129 105
R219 104
Q27
R217 103
R218 363
C130 104
CCD DRIVE VOLTAGE GENERATOR
+9V
L19 8R2
R203 221
Q22
C113 0.1/35
D14
C112 0.22/35
Q23
D15
R204 102
C111 4.7/12.5
FWHD
D16
D17
C114 10/16
C115 10/16
C118 OPEN
C119 10/16V
18V
9V
R207 0R00
C135 105
D21 OPEN
R208 OPEN
C124
D18
C116 10/16
C120 10/16
R206 104
D20
C125
-9V
D19
C117 10/16
C121 10/16
R205 102
-18V
①
②
③
④
⑤
⑧
⑨
FCP2
ALC VIDEO
ALC CONTROL
+5V (1)
L10 8R2
CDS OUT
Q30
R191 102
+5V (2)
OUT

DIAGRAM OF DRIVE BOARD

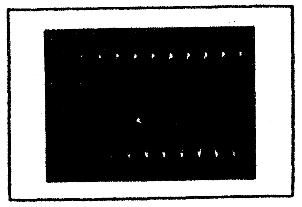

DC POWER SUPPLY
IC7
CT
RT
IN1+
IN2-
FB1
DTC1
OUT1
GND
REF
SCP
IN2+
IN2-
FB2
DTC2
OUT2
VCC
L16 220
+9V
C70 4.7/12.5
R132 0R00
R131 0R00
+5V (2)
+5V (1)
+5V
+3.5V
L3 220
L4 220
R150 0R00
Q2
Q3
D1
D2
D23
IC10
V DRIVER
OSUB
VL
OV2
VM13
OV1
VDC
IV1
CH1
IV2
ISUB
VHH
VM24
OV4
OV3
VH
GND
IV3
CH2
IV4
NC
Q26
Q27
20V
15V
-8V
V1
V2
SUB
V4
V5
CCD DRIVE
VOLTAGE
GENERATOR
+9V
L19 8R2
FWHD
Q22
Q23
Q24
D14
D15
D16
D17
D18
D19
D20
D21
18V
9V
-9V
-18V
CS
DATA
CLK
FH2
FVD
FWHD
HCLR
DCP
8FSC
FCK
CN3
TEST
VD
GND
SCK
SIO
N.C
TO
EVR
ADJ KIT
CN4
DGND
TG CS
SK
DI
DCP
FH2
HCLR
DGND
ALC FINE
LOWCLIP
AMPGC
AGC DATA
OB CONT
VRB
AGND1
AD IN
VRT
5V
DGND
SIO
SCK
TEST
FWHD
FVD
FCK
DGND
TO
DIGITAL
BOARD
...CN1
CN5
ATW SW
8FSC
CP2
CBLK
SYNC
3.5V
DGND
DGND
EC OUT
R144 0R00
+3.5V
VIDEO OUT

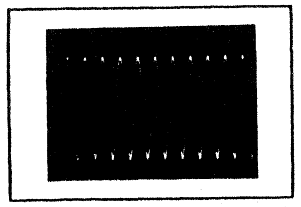
<Index>

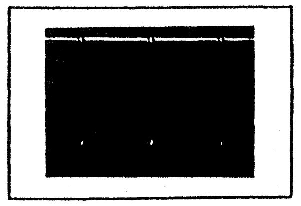
DRIVE BOARD	
IC1	C1
IC2	D2
IC3	B1
IC4	C4
IC6	B3
IC7	D6
IC8	B5
IC10	D4
IC13	C2
Q1	C3
Q2	D5
Q3	D6
Q9	A1
Q15	B5
Q17	A1
Q18	A1
Q19	B2
Q22	C4
Q23	C4
Q24	C5
Q26	D4
Q27	D5
Q28	A2
Q29	A2
Q30	B3
Q33	C2
Q34	C2
Q35	C2
Q36	B4
Q37	B4
D1	D5
D2	D6
D3	D3
D10	C3
D11	C3
D14	C4
D15	C4
D16	C4,5
D17	C4,5
D18	C4,5
D19	C4,5
D20	C5
D22	D4
D23	D6

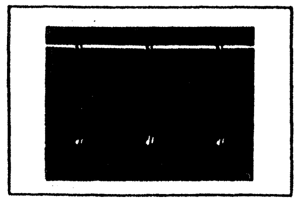

ALC CONTROL
IC3
GND
Y IN
CP2
CNT
SW
DC
REFO
9V
REF
OP1O
OP1-
OP2O
OP2-
DRIVE
5V
DUMP
FCP2
ALC VIDEO
CDS OUT
+5V (1)
L10 8R2
C49 22/16
R199 OPEN
R200 OPEN
R35 104
R201 0R00
C11 222
R33 154
C10 105
C9 473
R32 103
R31 153
R252 202
R21 202
R20 102
C8 104
R25 102
R18 OPEN
C7 104
R14 0R00
R195 0R00
R19 OPEN
+9V
C110 105
R202 102
Q17
Q18
R137 162
C109 104
R221 222
Q29
Q28
R222 222
R29 102
C50 105
R34 104
R198 102
R28 104
Q9
2.5V/9V
DAMPER/NC
DRIVE/AV
CN2
CDS OUT
GND
AGC OUT
GND
AD IN
GND
EVR TEST
SERBO
ALC SW
ALC FINE
R52 102
CF1
R54 0R00
R59 562
R56 102
Q19
L11 8R2
R60 562
C25 1/16
CF08
FCP2
PBLK
CP08
R91 OPEN
R75 102
IC6
AGC
AGC OUT
AGC CNT
AFOUT
PED
CDS-IN
CF08
PBLK
CP21N
VCC1
TRAP
GM OUT
PA IN
VCC2
1.8V
1.3V
AMPGC
OUT
DC CONT
CP21N
PAGC
VREF3
OB
3.3V
C21 104
C20 104
C22 104
Q30
C101 104
R190 102
R189 102
R191 102
CF8
R114 OPEN
R123 102
C29 104
R119 OPEN
R121 102
C88 1/16
C89 10/10
R107 0R00
L14 33
C27 180
C28 104
C85 47/10
C87 47/10
C90 10/10
R90 182
C102 104
R72 202
AMPGC CONT
AD IN
OB CONT
VRT 3.3V
VRB 1.3V
PED CONT
AGC CONT
EC OUT
C43 104
R146 102
CF2
R147 0R00
Q37
R254 OPEN
R258 302
Q36
R257 222
R255 132
R256 132
R149 OPEN
R153 222
Q15
+5V (2)
L17 8R2
C92 10/10
C45 104
SYNC
EY OUT
CP2
L18 OPEN
SCIN
C103 OPEN
R233 OPEN
R234 OPEN
R231 OPEN
R232 OPEN
Q32 OPEN
B
A
1
2
3
4

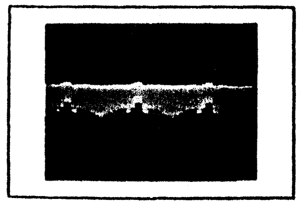
⟨Wave Forms⟩

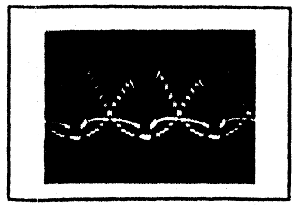

1. 20μsec/DIV 0.2V/DIV

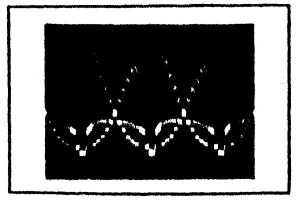

2. 20μsec/DIV 0.2V/DIV

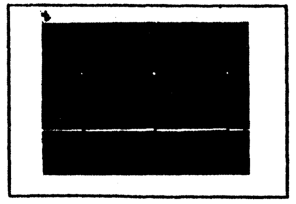

3. 0.1μsec/DIV 1V/DIV

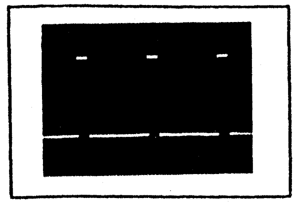

4. 20μsec/DIV 2V/DIV

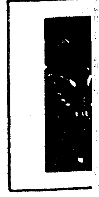

5. 20μsec/DIV 2V/DIV

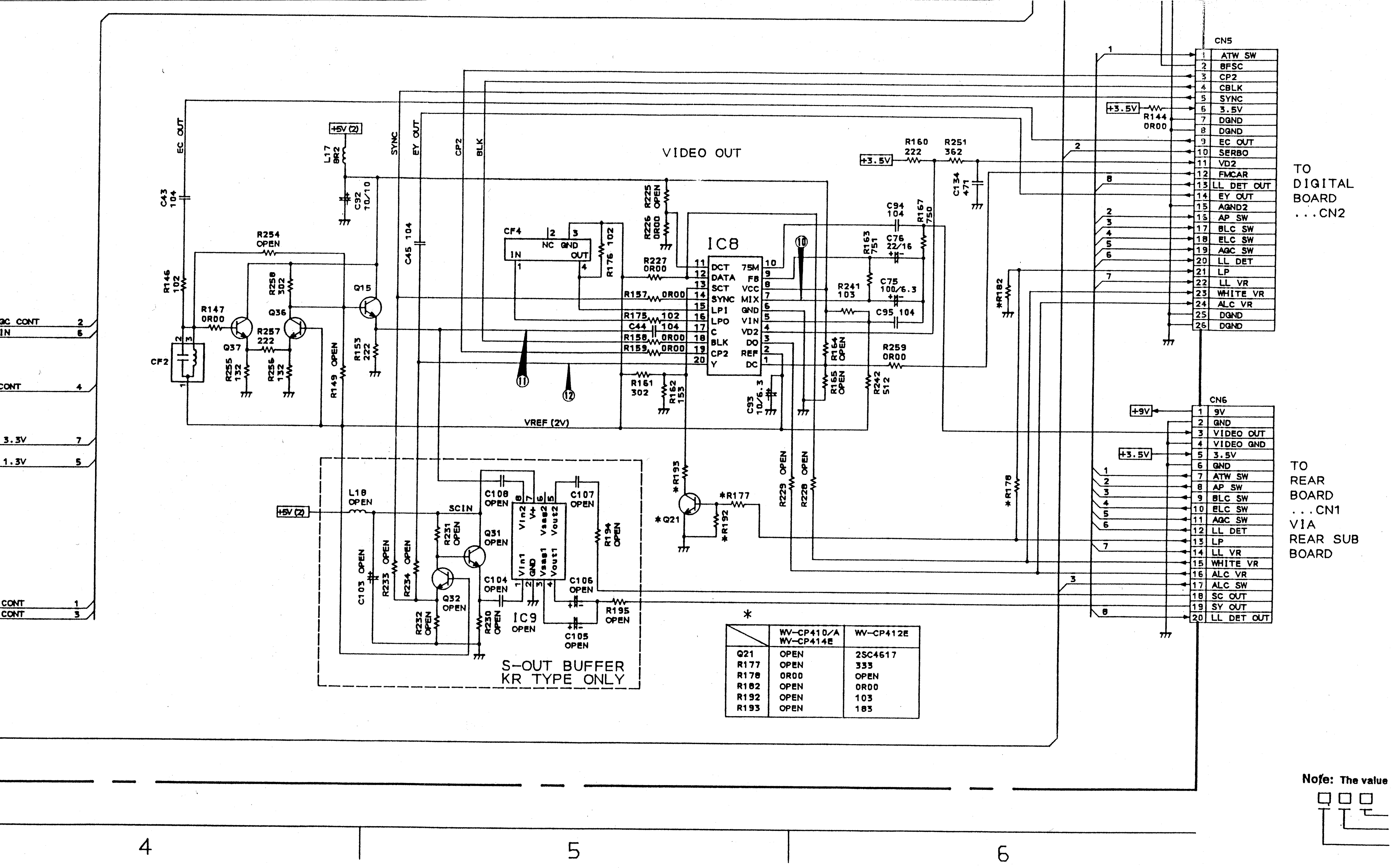

6. 0.1μsec/DIV 1V/DIV


7. 20μsec/DIV 0.1V/DIV


8. 20μsec/DIV 0.1V/DIV


9. 5msec/DIV 2V/DIV


10. 20μ


VIDEO OUT
IC8
DCT
DATA
SCT
SYNC
LPI
LPO
C
BLK
CP2
Y
75M
FB
VCC
MIX
GND
VIN
VD2
DO
REF
DC
CF4
NC GND
IN
OUT
IC9
Vin2
V+
Vsag2
Vout2
Vin1
GND
Vsag1
Vout1
S-OUT BUFFER
KR TYPE ONLY
SCIN
VREF (2V)
EC OUT
SYNC
EY OUT
CP2
BLK
Q15
Q36
Q37
*Q21
Q31
OPEN
Q32
OPEN
CF2
L17
8R2
L18
OPEN
+5V (2)
+3.5V
+9V
R144
0R00
R160
222
R251
362
C134
471
C94
104
R167
750
R163
751
C76
22/16
C75
100/6.3
R241
103
C95 104
R259
0R00
R242
512
R165
OPEN
R164
OPEN
C93
10/6.3
R229
OPEN
R228
OPEN
*R182
*R178
*R193
*R177
*R192
R225
OPEN
R226
0R00
R227
0R00
R176 102
R157 0R00
R175 102
C44 104
R158 0R00
R159 0R00
R161
302
R162
153
C43
104
C45 104
C92
10/10
R254
OPEN
R146
102
R147
0R00
R258
302
R257
222
R255
132
R256
132
R149 OPEN
R153
222
C108
OPEN
C107
OPEN
R231
OPEN
R194
OPEN
C103 OPEN
R233 OPEN
R234 OPEN
R232
OPEN
R230
OPEN
C104
OPEN
C106
OPEN
C105
OPEN
R195
OPEN
⑩
⑪
⑫
CN5
1 ATW SW
2 BFSC
3 CP2
4 CBLK
5 SYNC
6 3.5V
7 DGND
8 DGND
9 EC OUT
10 SERBO
11 VD2
12 FMCAR
13 LL DET OUT
14 EY OUT
15 AGND2
16 AP SW
17 BLC SW
18 ELC SW
19 AGC SW
20 LL DET
21 LP
22 LL VR
23 WHITE VR
24 ALC VR
25 DGND
26 DGND
TO
DIGITAL
BOARD
...CN2
CN6
1 9V
2 GND
3 VIDEO OUT
4 VIDEO GND
5 3.5V
6 GND
7 ATW SW
8 AP SW
9 BLC SW
10 ELC SW
11 AGC SW
12 LL DET
13 LP
14 LL VR
15 WHITE VR
16 ALC VR
17 ALC SW
18 SC OUT
19 SY OUT
20 LL DET OUT
TO
REAR
BOARD
...CN1
VIA
REAR SUB
BOARD
GC CONT
IN
CONT
3.3V
1.3V
CONT
CONT
4
5
6

*

	WV-CP410/A WV-CP414E	WV-CP412E
Q21	OPEN	2SC4617
R177	OPEN	333
R178	0R00	OPEN
R182	OPEN	0R00
R192	OPEN	103
R193	OPEN	183

Note: The value indicated in schematic diagram should be read as follows:

□ □ □
Multiplier (0 - 5)
2nd. Significant Digit (0 - 9)
1st. Siginificant Digit (1 - 9)

<Example>

For Resistor:

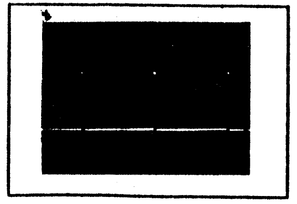
330 → 33×10^0 = 33Ω
561 → 56×10^1 = 560Ω
123 → 12×10^3 = 12kΩ
0R00 = 0 Ω

For Capacitor:

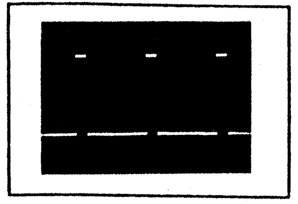
820 → 82×10^0 = 82pF
102 → 10×10^2 = 1000pF = 0.001μF
104 → 10×10^4 = 100000pF = 0.1μF

The suffix attached to capacitance indicates a type of capacitor.

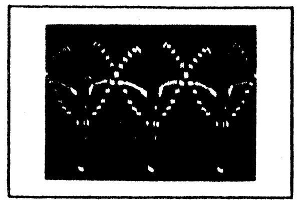
8. 20μsec/DIV 0.1V/DIV



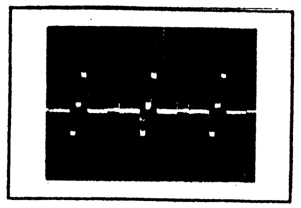
9. 5msec/DIV 2V/DIV



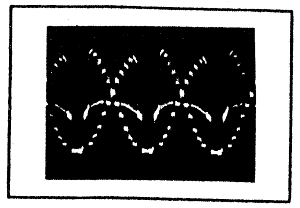
10. 20μsec/DIV 1V/DIV



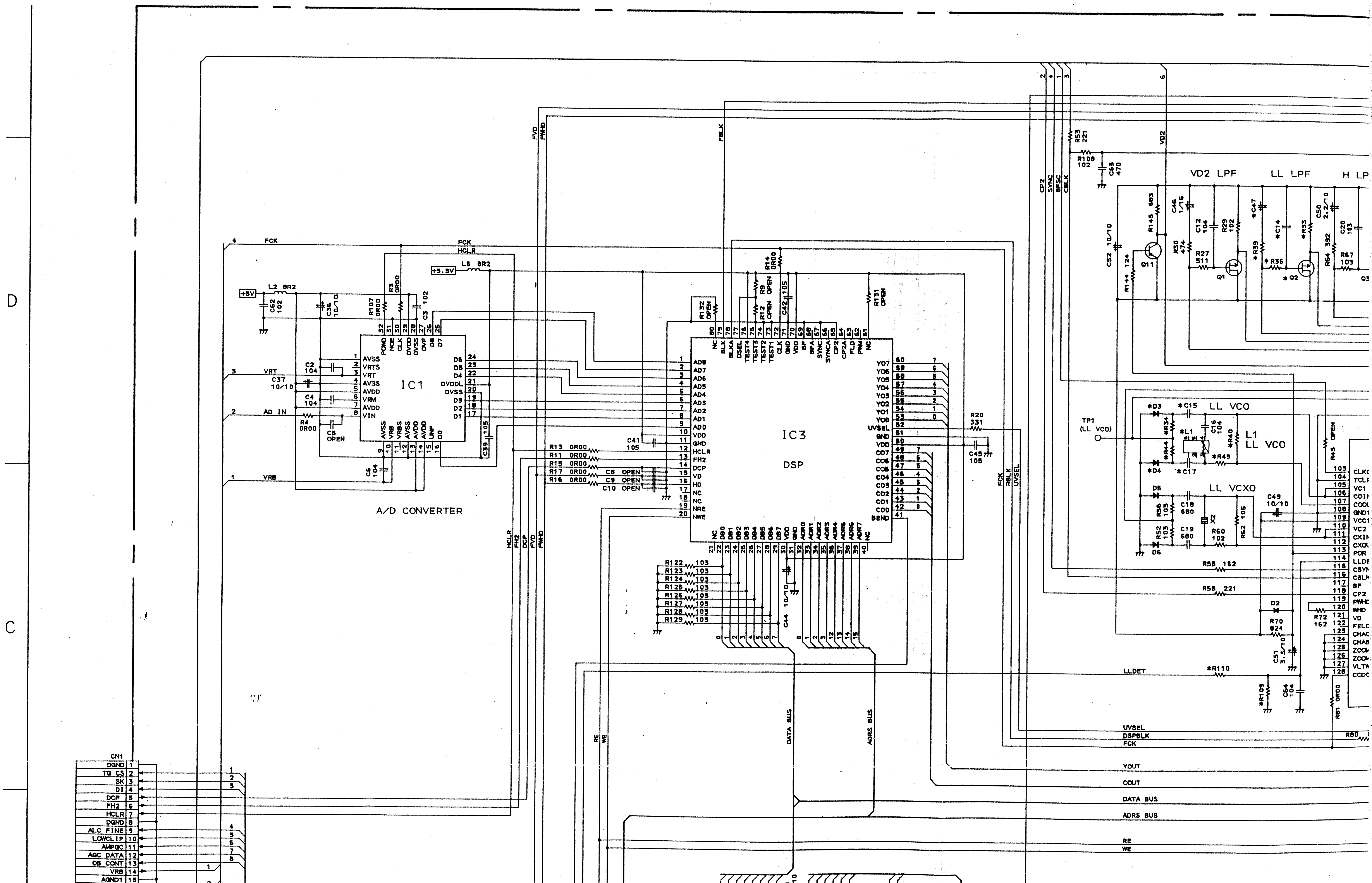
11. 20μsec/DIV 0.1V/DIV



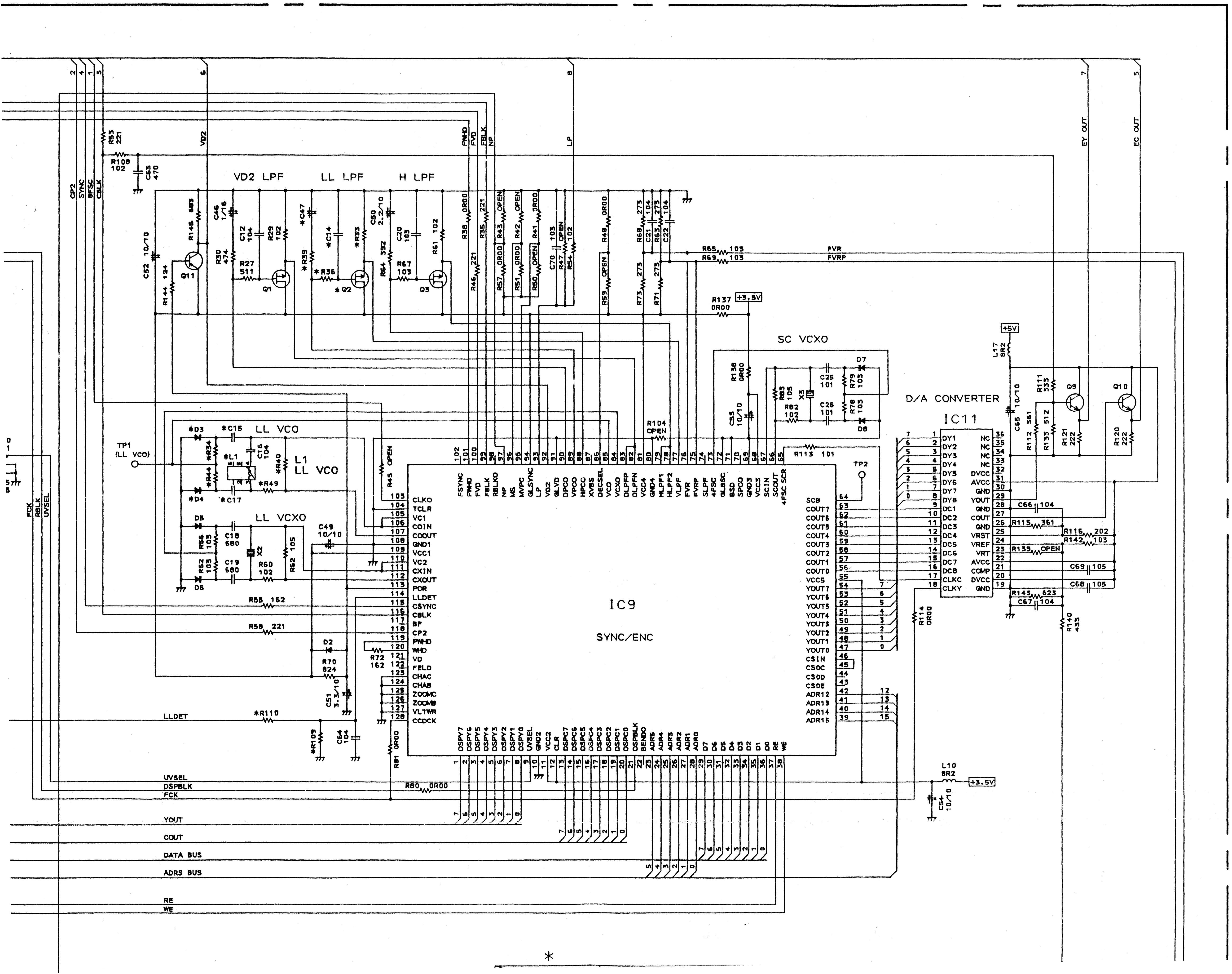
12. 20μsec/DIV 0.2V/DIV



DIGITAL BOARD


D
C
IC1
A/D CONVERTER
+5V
L2 8R2
+3.5V
L6 8R2
FCK
HCLR
VRT
AD IN
VRB
AVSS
VRTS
VRT
AVDD
VRM
VIN
POWD
NOE
CLK
DVDD
DVSS
DVF
D8
D7
D6
D5
D4
DVDDL
DVSS
D3
D2
D1
D0
UNF
VRBS
IC3
DSP
AD8
AD7
AD6
AD5
AD4
AD3
AD2
AD1
AD0
VDD
GND
HCLR
FH2
DCP
VD
HD
NC
NRE
NWE
FBLK
FVD
FWHD
YO7
YO6
YO5
YO4
YO3
YO2
YO1
YO0
UVSEL
GND
VDD
CO7
CO6
CO5
CO4
CO3
CO2
CO1
CO0
BEND
DB0
DB1
DB2
DB3
DB4
DB5
DB6
DB7
ADR0
ADR1
ADR2
ADR3
ADR4
ADR5
ADR6
ADR7
BLK
BLKA
DSEL
TEST4
TEST3
TEST2
TEST1
SYNC
BFA
SYNCA
CP2
CP2A
FLD
PWM
R13 0R00
R11 0R00
R15 0R00
R17 0R00
R16 0R00
C8 OPEN
C9 OPEN
C10 OPEN
R122 103
R123 103
R124 103
R125 103
R126 103
R127 103
R128 103
R129 103
R20 331
C45 105
C41 105
C44 10/10
DATA BUS
ADRS BUS
RE
WE
CP2
SYNC
BFSC
CBLK
VD2
R53 221
R108 102
C53 470
VD2 LPF
LL LPF
H LP
Q1
Q11
Q2
LL VCO
L1
LL VCO
LL VCXO
TP1
(LL VCO)
X2
D3
D4
D5
D6
D2
R55 152
R58 221
R70 824
R72 162
C51 3.3/10
C49 10/10
C64 104
LLDET
*R110
*R109
R81 0R00
R80
UVSEL
DSPBLK
FCK
YOUT
COUT
DATA BUS
ADRS BUS
RE
WE
CLKC
TCLR
VC1
COIN
COOU
GND1
VCC1
VC2
CXIN
CXOU
POR
LLDE
CSYN
CBLK
BF
CP2
FWHD
WHD
VD
FELD
CHAC
CHAB
ZOOM
ZOOM
VLTW
CCDC
CN1
DGND 1
TG CS 2
SK 3
DI 4
DCP 5
FH2 6
HCLR 7
DGND 8
ALC FINE 9
LOWCLIP 10
AMPGC 11
AGC DATA 12
OB CONT 13
VRB 14
AGND1 15

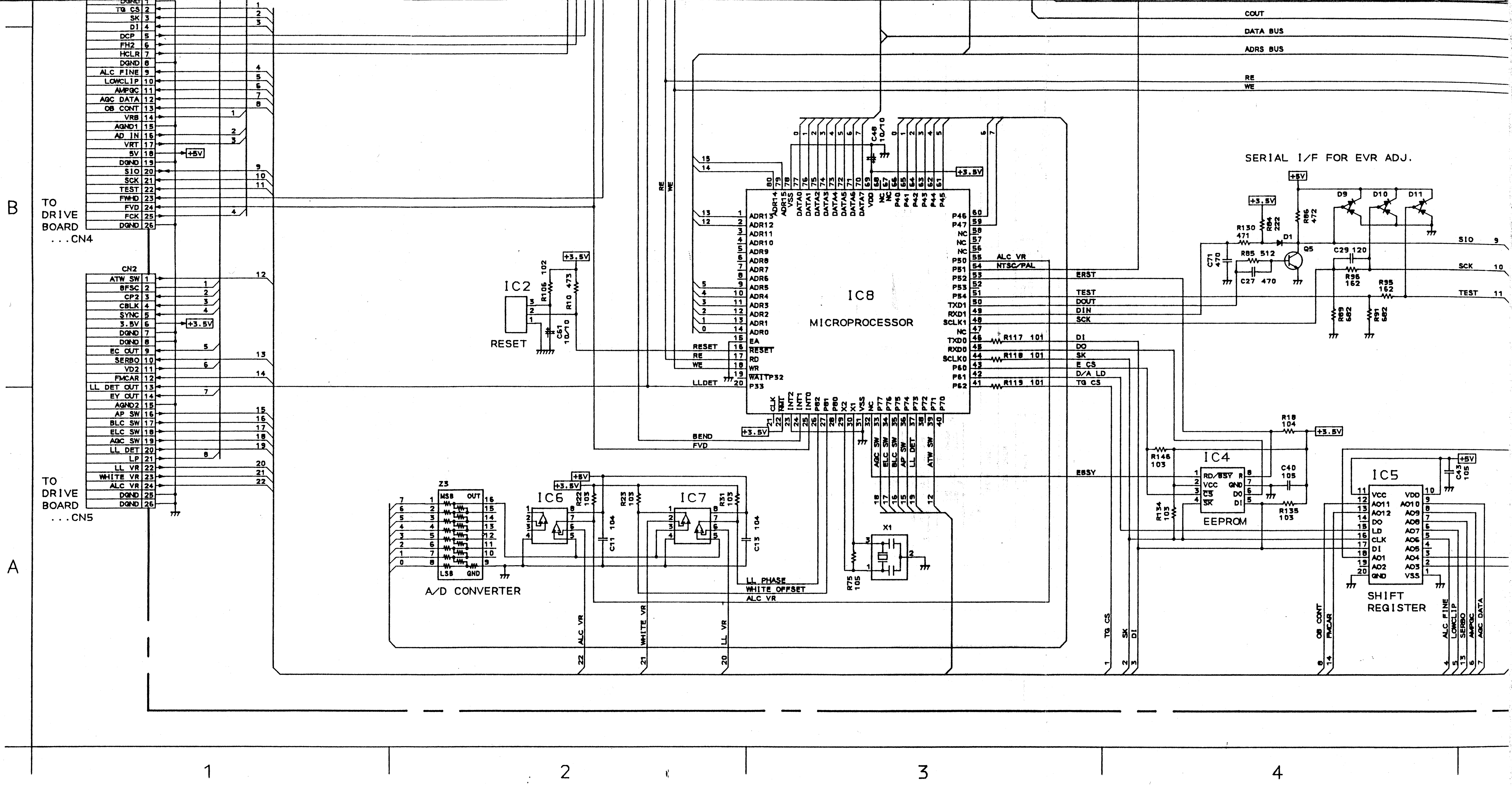
SCHEMATIC DIAGRAM OF DIGITAL BOARD

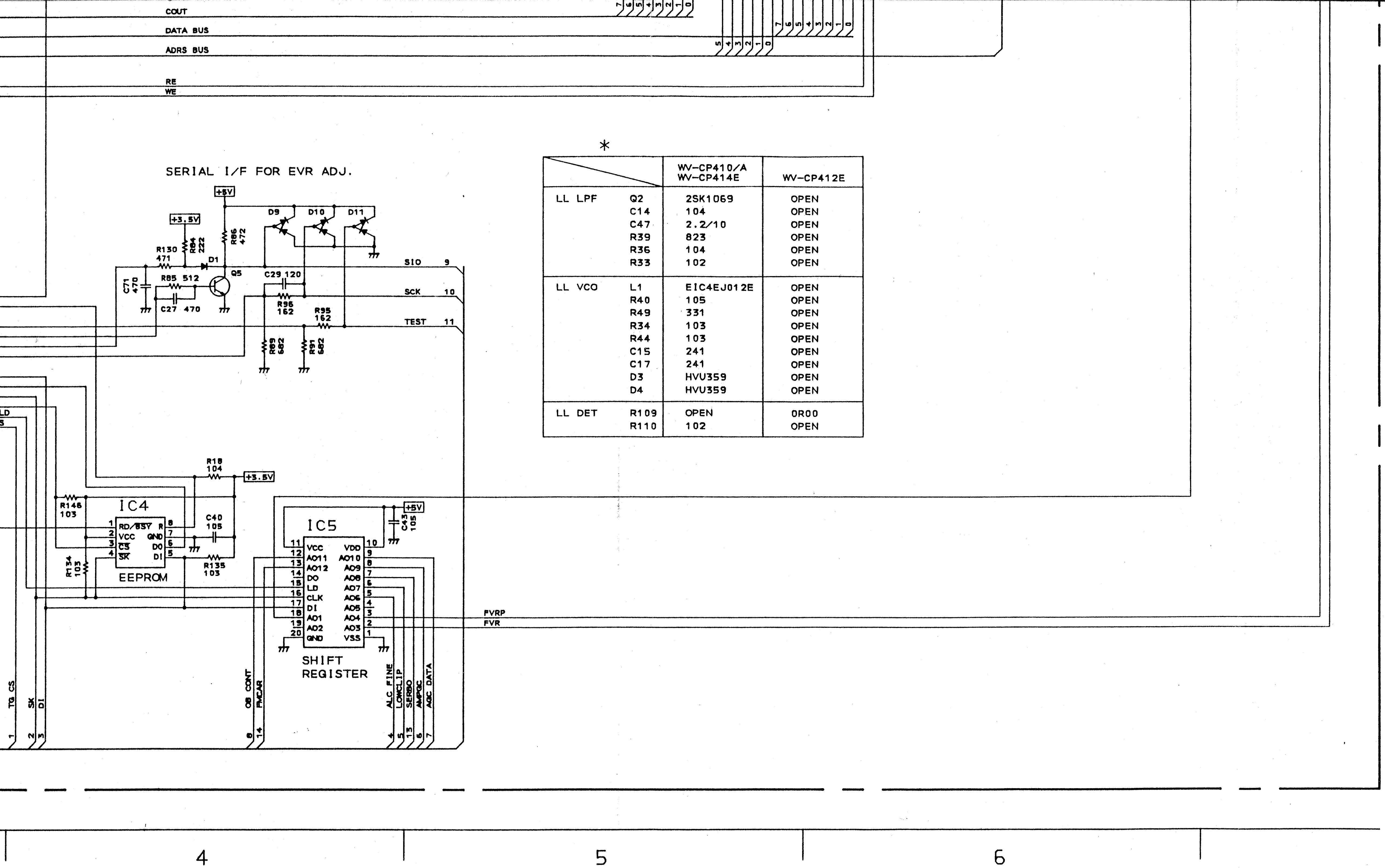

VD2 LPF
LL LPF
H LPF
SC VCXO
LL VCO
L1 LL VCO
LL VCXO
TP1 (LL VCO)
TP2
D/A CONVERTER
IC11
IC9
SYNC/ENC
EY OUT
EC OUT
FVR
FVRP
LLDET
UVSEL
DSPBLK
FCK
YOUT
COUT
DATA BUS
ADRS BUS
RE
WE
+3.5V
+5V
CP2
SYNC
BFSC
CBLK
VD2
LP
FWHD
FVD
FBLK
NP
Q1
Q2
Q3
Q9
Q10
Q11
*

<Index>

DIGITAL BOARD

IC1	D2
IC2	B2
IC3	C,D3
IC4	A4
IC5	A4
IC6	A2
IC7	A2
IC8	B3
IC9	C5
IC11	C,D6
Q1	D4
Q2	D4
Q3	D5
Q5	B4
Q9	D7
Q10	D7
Q11	D4
D1	B4
D2	C4
D3	D4
D4	D4
D5	C4
D6	C4
D7	D6
D8	D6
D9	B4
D10	B4
D11	B4


TO DRIVE BOARD ...CN4
TO DRIVE BOARD ...CN5
CN2
TG CS
SK
DI
DCP
FH2
HCLR
DGND
ALC FINE
LOWCLIP
AMPGC
AGC DATA
OB CONT
VRB
AGND1
AD IN
VRT
5V
SIO
SCK
TEST
FWHD
FVD
FCK
ATW SW
BFSC
CP2
CBLK
SYNC
3.5V
EC OUT
SERBO
VD2
FMCAR
LL DET OUT
EY OUT
AGND2
AP SW
BLC SW
ELC SW
AGC SW
LL DET
LP
LL VR
WHITE VR
ALC VR
+5V
+3.5V
IC2
RESET
R105 102
R10 473
C51 10/10
IC8
MICROPROCESSOR
C48 10/10
RE
WE
BEND
FVD
LLDET
COUT
DATA BUS
ADRS BUS
ALC VR
NTSC/PAL
ERST
DOUT
DIN
R117 101
R118 101
R119 101
DO
E CS
D/A LD
EBSY
SERIAL I/F FOR EVR ADJ.
R130 471
R84 222
R86 472
D1
D9
D10
D11
Q5
C71 470
R85 512
C27 470
C29 120
R96 162
R95 162
R89 682
R91 682
R18 104
R146 103
IC4
EEPROM
C40 105
R134 103
R135 103
IC5
SHIFT REGISTER
C43 105
Z3
A/D CONVERTER
MSB
LSB
OUT
GND
IC6
IC7
R22 103
R23 103
R31 103
C11 104
C13 104
LL PHASE
WHITE OFFSET
X1
R75 105
1
2
3
4
A
B


COUT
DATA BUS
ADRS BUS
RE
WE
SERIAL I/F FOR EVR ADJ.
+5V
+3.5V
D9
D10
D11
R130 471
R84 222
R86 472
D1
Q5
C71 470
R85 512
C27 470
C29 120
R96 162
R95 162
R89 682
R91 682
SIO 9
SCK 10
TEST 11
LD
R18 104
+3.5V
R146 103
IC4
RD/BSY
VCC
CS
SK
GND
DO
DI
EEPROM
C40 105
R134 103
R135 103
IC5
+5V
C43 105
VCC
AO11
AO12
DO
LD
CLK
DI
AO1
AO2
GND
VDD
AO10
AO9
AO8
AO7
AO6
AO5
AO4
AO3
VSS
SHIFT REGISTER
FVRP
FVR
TG CS
SK
DI
OB CONT
FMCAR
ALC FINE
LOWCLIP
SERBO
AMPGC
AGC DATA
4
5
6

*

		WV-CP410/A WV-CP414E	WV-CP412E
LL LPF	Q2	2SK1069	OPEN
	C14	104	OPEN
	C47	2.2/10	OPEN
	R39	823	OPEN
	R36	104	OPEN
	R33	102	OPEN
LL VCO	L1	EIC4EJ012E	OPEN
	R40	105	OPEN
	R49	331	OPEN
	R34	103	OPEN
	R44	103	OPEN
	C15	241	OPEN
	C17	241	OPEN
	D3	HVU359	OPEN
	D4	HVU359	OPEN
LL DET	R109	OPEN	0R00
	R110	102	OPEN

Note: The value indicated in schematic diagram should be read as follows:

☐ ☐ ☐

- Multiplier (0 - 5)
- 2nd. Significant Digit (0 - 9)
- 1st. Siginificant Digit (1 - 9)

<Example>

For Resistor:

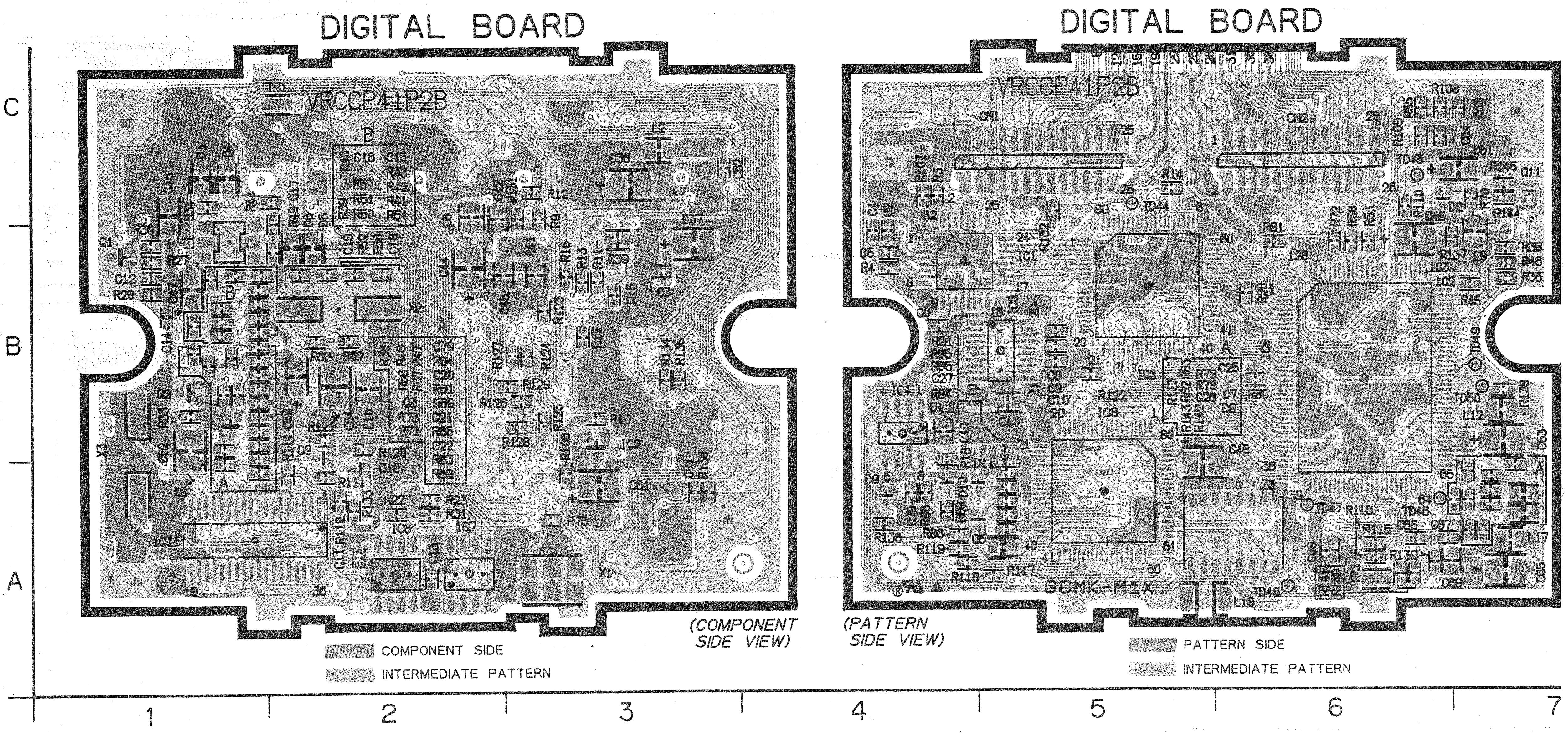
330 → 33 x 10^0 = 33Ω
561 → 56 x 10^1 = 560Ω
123 → 12 x 10^3 = 12kΩ
0R00 = 0 Ω

For Capacitor:

820 → 82 x 10^0 = 82pF
102 → 10 x 10^2 = 1000pF = 0.001µF
104 → 10 x 10^4 = 100000pF = 0.1µF

The suffix attached to capacitance indicates a type of capacitor.

CONDUCTOR VIEW OF DIGITAL BOARD


DIGITAL BOARD
VRCCP41P2B
(COMPONENT SIDE VIEW)
COMPONENT SIDE
INTERMEDIATE PATTERN
DIGITAL BOARD
(PATTERN SIDE VIEW)
PATTERN SIDE
INTERMEDIATE PATTERN
6CMK-M1X
C
B
A
1
2
3
4
5
6
7

<Voltages>

DIGITAL BOARD

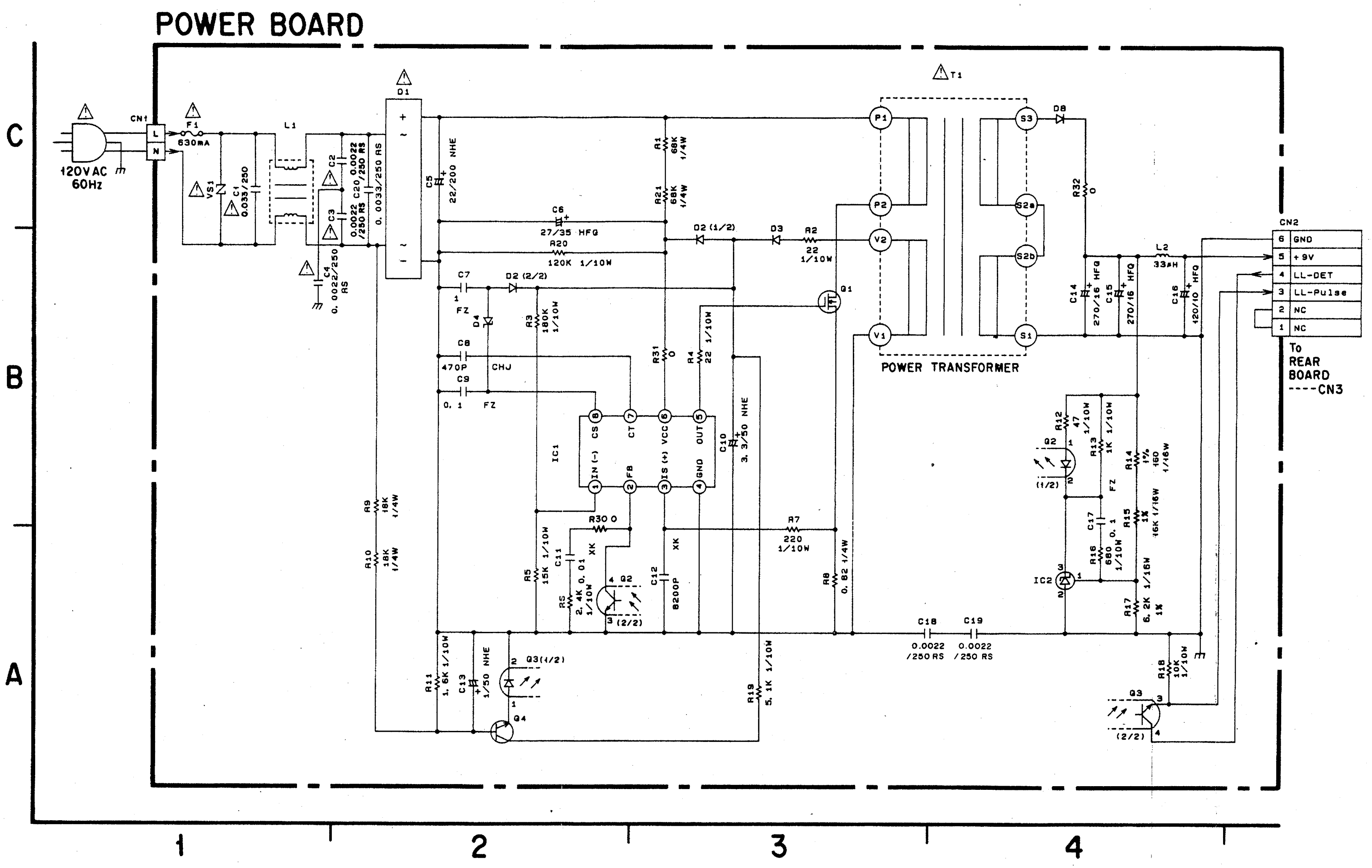
	IC2	IC4	IC5	IC6	IC7	IC11
Pin 1	3.5	3.5	0	0	0	1.3
2	3.5	3.5	2.5	5.5	3.8	1.0
3	0	3.5	2.5	5.7	1.7	1.2
4		3.5	5.0	0	0	1.2
5		3.5	3.0	1.7	1.7	1.2
6		0.7	2.8	1.7	1.7	1.1
7		0	1.3	3.4	0	1.2
8		0	3.3	5.0	5.0	1.2
9			1.1			1.9
10			5.0			1.2
11			5.0			1.2
12			2.9			1.2
13			2.5			1.2
14			0			1.1
15			0			1.2
16			3.5			1.0
17			3.5			1.4
18			0			1.7
19			4.2			0
20			0			4.9
21						3.7
22						4.9
23						3.7
24						3.7
25						1.1
26						0
27						4.3
28						0
29						3.8
30						0
31						4.9
32						4.9
33						0
34						0
35						0
36						0

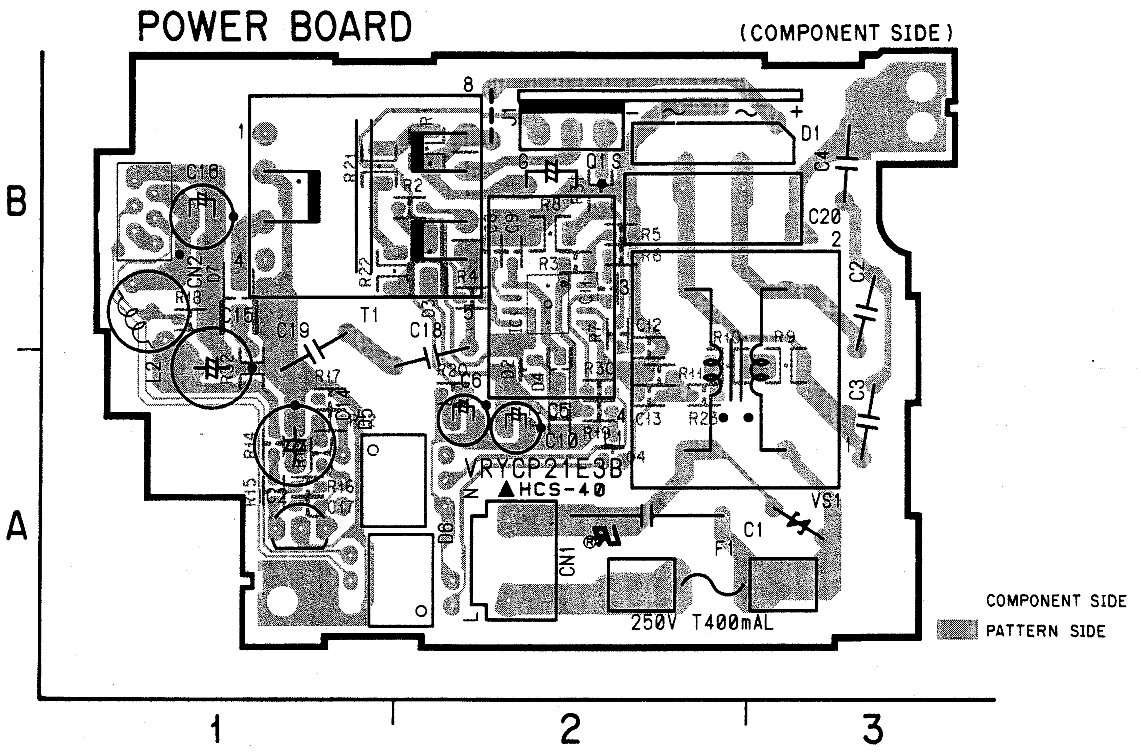
<Index>

DIGITAL BOARD

IC1	B4
IC2	B3
IC3	B5
IC4	B4
IC5	B5
IC6	A2
IC7	A2
IC8	A5
IC9	B6
IC11	A1,2
Q1	B1
Q2	B1
Q3	B1
Q5	A4
Q9	B2
Q10	A2
Q11	C7
D1	A5
D2	C6
D3	C1
D4	C1
D5	B2
D6	B2
D7	A7
D8	A7
D9	A4
D10	A4
D11	A4

CONDUCTOR VIEW OF POWER BOARD (WV-CP410)


POWER BOARD
C
B
A
1
2
3
4
120VAC
60Hz
CN1
F1
630mA
L1
VS1
D1
C5
22/200 NHE
R1
68K
1/4W
R21
68K
1/4W
C6
27/35 HFG
R20
120K 1/10W
C7
D2 (2/2)
D2 (1/2)
D3
R2
22
1/10W
Q1
R3
180K
1/10W
C8
470P
CHJ
C9
0.1
FZ
IC1
R30 0
R31
R4
22 1/10W
C10
3.3/50 NHE
R7
220
1/10W
R5
15K 1/10W
C11
0.01
XK
R6
2.4K
1/10W
Q2
(2/2)
C12
8200P
R8
0.82 1/4W
R9
18K
1/4W
R10
18K
1/4W
R11
1.6K 1/10W
C13
1/50 NHE
Q3(1/2)
Q4
R19
5.1K 1/10W
T1
P1
P2
V2
V1
S3
S2a
S2b
S1
POWER TRANSFORMER
D8
R32
0
C14
270/16 HFG
C15
270/16 HFG
L2
33μH
C16
120/16 HFG
CN2
6 GND
5 +9V
4 LL-DET
3 LL-Pulse
2 NC
1 NC
To
REAR
BOARD
----CN3
Q2
(1/2)
R12
47
1/10W
R13
1K 1/10W
R14
160
1/16W
C17
0.1
FZ
R15
1K
1/16W
R16
680
1/10W
IC2
R17
6.2K 1/16W
1K
C18
0.0022
/250RS
C19
0.0022
/250RS
R18
10K
1/10W
Q3
(2/2)


POWER BOARD
(COMPONENT SIDE)
B
A
1
2
3
C18
CN2
C15
C19
T1
C18
Q1
D1
C4
C20
C21
C3
R9
C13
C12
VS1
C1
F1
CN1
VRYCP21E3B
▲HCS-40
250V T400mAL
COMPONENT SIDE
▨ PATTERN SIDE

<Index>

POWER BOARD

IC1	B2
IC2	A1
Q1	B2
Q2	A2
Q3	A1
Q4	A2
D1	B2
D2	A2
D3	B2
D4	A2
D8	B1

Note: The value indicated in schematic diagram should be read as follows:

☐ ☐ ☐
- Multiplier (0 - 5)
- 2nd. Significant Digit (0 - 9)
- 1st. Siginificant Digit (1 - 9)

<Example>

For Resistor:

330 → 33 x 10^0 = 33Ω
561 → 56 x 10^1 = 560Ω
123 → 12 x 10^3 = 12kΩ
0R00 = 0 Ω

For Capacitor:

820 → 82 x 10^0 = 82pF
102 → 10 x 10^2 = 1000pF = 0.001μF
104 → 10 x 10^4 = 100000pF = 0.1μF

The suffix attached to capacitance indicates a type of capacitor.

PRODUCT SAFETY NOTICE
COMPONENT IDENTIFIED WITH THE "⚠" MARK HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN SERVICING ANY OF THESE COMPONENTS, IT IS ESSENTIAL THAT ONLY MANUFACTURE'S SPECIFIED PARTS BE USED.

<Index>

POWER BOARD

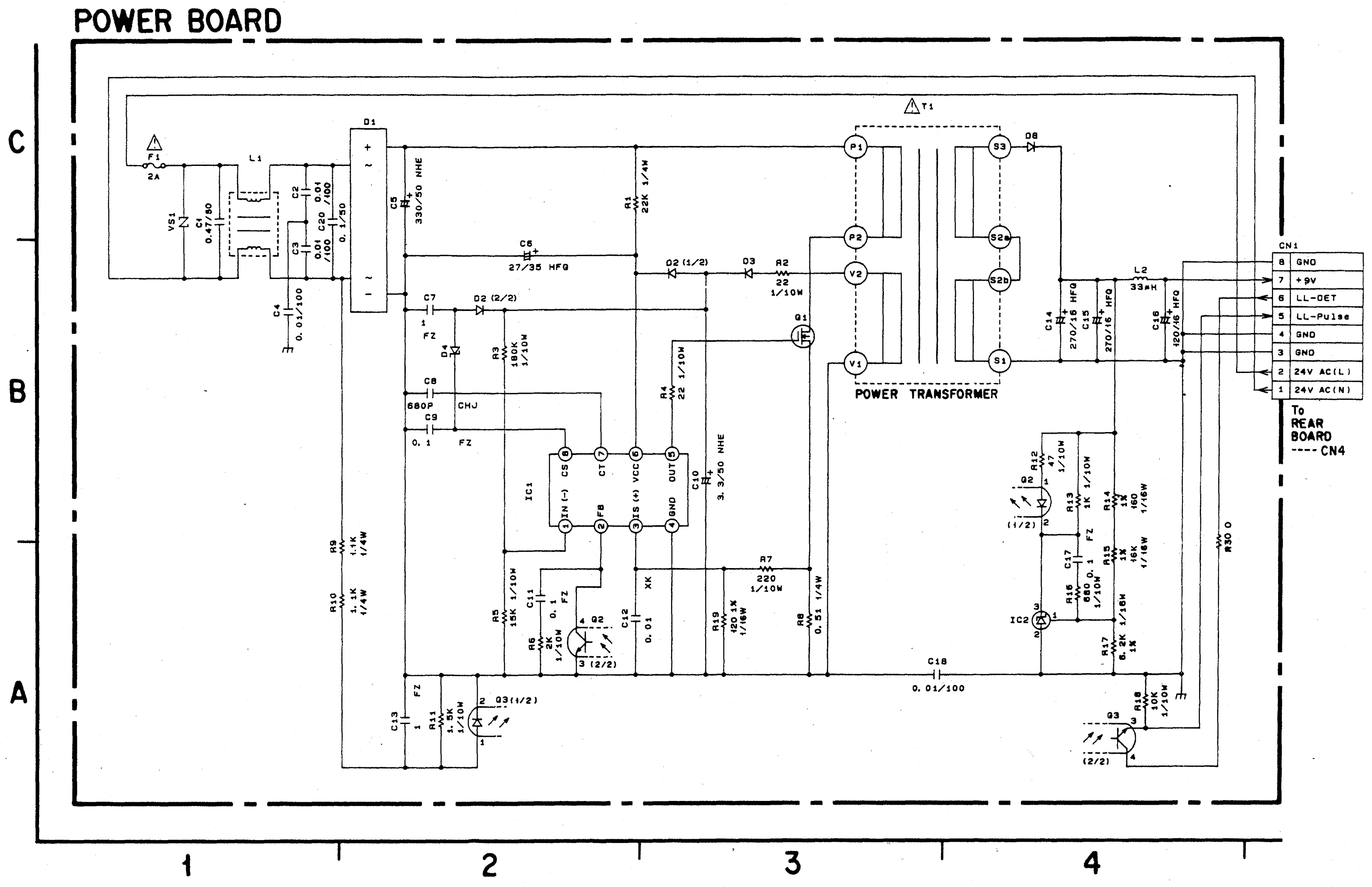
IC1	B2
IC2	A4
Q1	B3
Q2	A2,B4
Q3	A2,A4
Q4	A2
D1	C2
D2	B2,B3
D3	B3
D4	B2
D8	C4

<Voltages>

POWER BOARD

	IC1	IC2
Pin 1	1.2	2.7
2	1.2	0
3	0.5	7.9
4	0	
5	2.5	
6	17.7	
7	2.0	
8	3.5	

SCHEMATIC DIAGRAM OF POWER BOARD (WV-CP414)


POWER BOARD
C
B
A
1
2
3
4
F1
2A
VS1
C1 0.47/50
L1
C2 0.01 /100
C20 0.01 /100
C3 0.01 /100
C4 0.01/100
0.1/50
D1
C5 330/50 NHE
R1 22K 1/4W
T1
P1
P2
V2
V1
S3
S2a
S2b
S1
D8
POWER TRANSFORMER
C6 27/35 HFQ
D2 (1/2)
D3
R2 22 1/10W
C7
D2 (2/2)
D4 FZ
R3 180K 1/10W
C8 680P CHJ
C9 0.1 FZ
Q1
R4 22 1/10W
IC1
CS
CT
VCC
OUT
IN(-)
FB
IS(+)
GND
C10 3.3/50 NHE
R7 220 1/10W
R5 15K 1/10W
C11 0.1 FZ
R6 2K 1/10W
Q2
C12 0.01
R19 120 1% 1/16W
R8 0.51 1/4W
R9 1.1K 1/4W
R10 1.1K 1/4W
C13 1 FZ
R11 1.5K 1/10W
Q3(1/2)
C18 0.01/100
C14 270/16 HFQ
C15 270/16 HFQ
L2 33µH
C16 120/16 HFQ
R12 47 1/10W
R13 1K 1/10W
R14 1K 160 1/16W
R15 1K 16K 1/16W
C17 0.1 FZ
R16 680 1/10W
IC2
R17 6.2K 1/16W 1K
R18 10K 1/10W
Q3 (2/2)
R30 0
CN1
8 GND
7 +9V
6 LL-DET
5 LL-Pulse
4 GND
3 GND
2 24V AC(L)
1 24V AC(N)
To REAR BOARD ---- CN4

Note: The value indicated in schematic diagram should be read as follows:

☐ ☐ ☐

Multiplier (0 - 5)
2nd. Significant Digit (0 - 9)
1st. Siginificant Digit (1 - 9)

<Example>

For Resistor:

330 → 33 x 10^0 = 33Ω
561 → 56 x 10^1 = 560Ω
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0R00 = 0 Ω

For Capacitor:

820 → 82 x 10^0 = 82pF
102 → 10 x 10^2 = 1000pF = 0.001µF
104 → 10 x 10^4 = 100000pF = 0.1µF

The suffix attached to capacitance indicates a type of capacitor.

PRODUCT SAFETY NOTICE

COMPONENT IDENTIFIED WITH THE "⚠" MARK HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN SERVICING ANY OF THESE COMPONENTS, IT IS ESSENTIAL THAT ONLY MANUFACTURE'S SPECIFIED PARTS BE USED.

<Index>

POWER BOARD

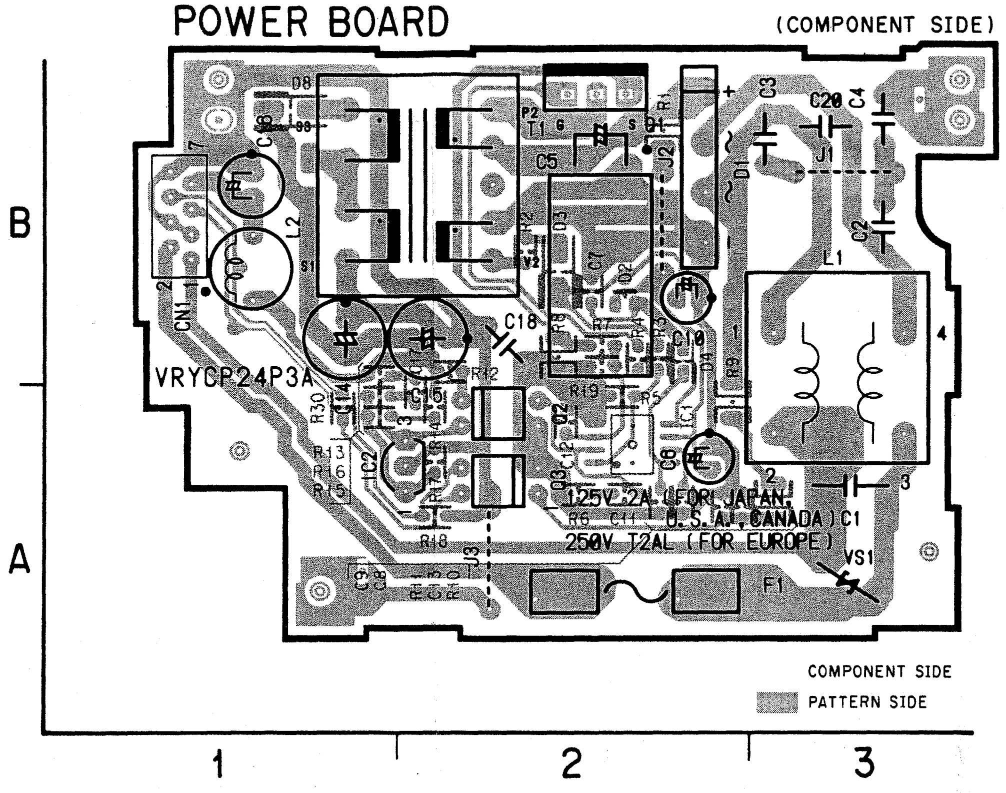
IC1	B2
IC2	A4
Q1	B3
Q2	A2,B4
Q3	A2,A4
D1	C2
D2	B2,B3
D3	B3
D4	B2
D8	C4

<Voltages>

POWER BOARD

	IC1	IC2
Pin 1	1.2	2.7
2	1.2	0
3	0.5	7.9
4	0	
5	2.5	
6	17.7	
7	2.0	
8	3.5	

CONDUCTOR VIEW OF POWER BOARD (WV-CP414)

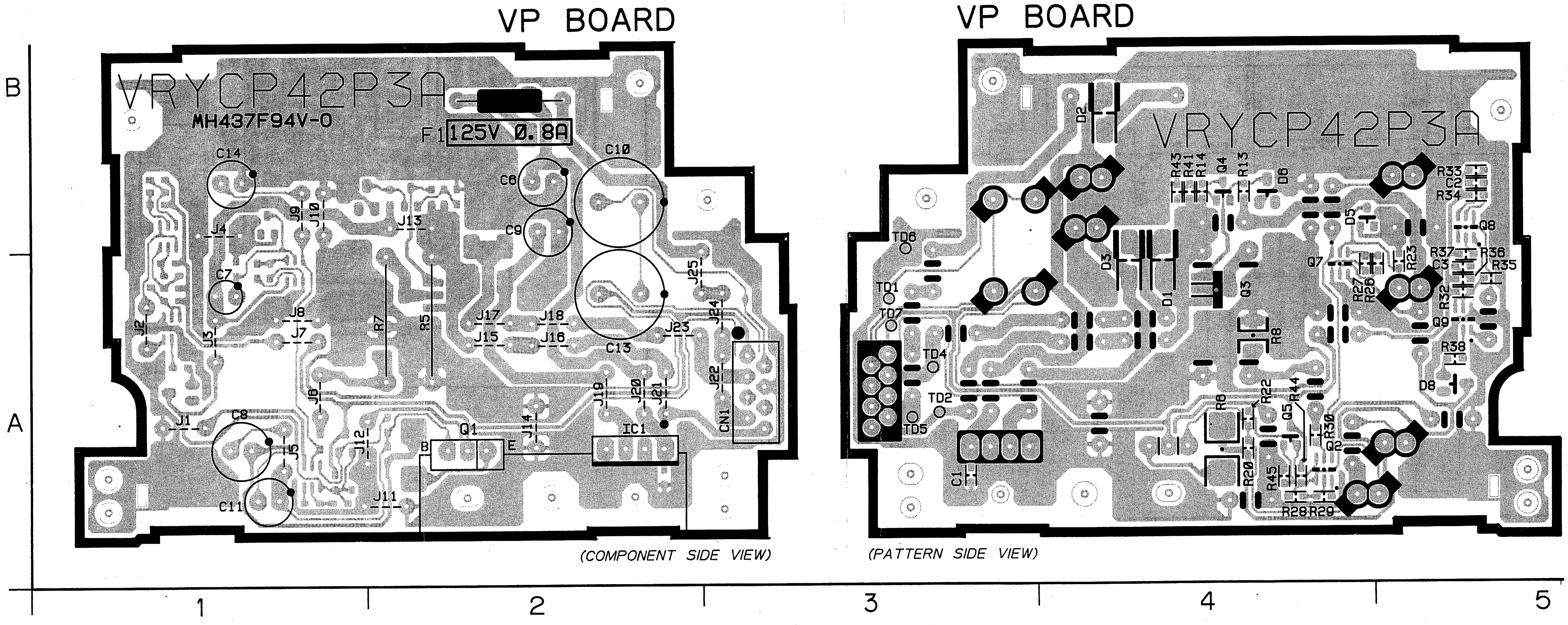

POWER BOARD
(COMPONENT SIDE)
B
A
1
2
3
D8
P2
T1
S1
C5
R1
C3
C20
C4
J1
J2
D1
C2
L1
L2
C1
CN1
C18
C19
C7
D2
D3
R8
R7
R4
R3
R2
R9
R12
R19
R5
R30
C14
C15
C16
IC1
IC2
Q1
Q2
Q3
C6
C8
C9
C10
R13
R16
R15
R18
R6
L3
VS1
F1
VRYCP24P3A
125V 2A (FOR JAPAN, U.S.A., CANADA)
250V T2AL (FOR EUROPE)
COMPONENT SIDE
PATTERN SIDE

<Index>

POWER BOARD

IC1	A2
IC2	A1
Q1	B2
Q2	A2
Q3	A2
D1	B2
D2	B2
D3	B2
D4	B2
D8	B1

CONDUCTOR VIEW OF VP BOARD (WV-CP412)


VP BOARD
VRYCP42P3A
MH437F94V-0
F1 125V 0.8A
C14
C10
C6
C9
J9
J10
J13
J4
C7
J25
J8
J7
J17
J18
R7
R5
J15
J16
J23
J24
J2
J3
C13
J22
J6
J19
J20
J21
C8
J1
Q1
B
E
IC1
J14
CN1
J5
J12
C11
J11
VP BOARD
D2
VRYCP42P3A
R43
R41
R14
Q4
R13
D6
R33
C2
R34
Q8
D5
TD6
R23
R37
C3
R36
R35
Q7
D3
Q3
D1
R27
R26
R32
TD1
TD7
Q9
R8
R38
TD4
R6
R22
R44
D8
TD2
Q5
R30
TD5
Q2
C1
R20
R45
R28
R29
B
A
1
2
3
4
5

(COMPONENT SIDE VIEW)

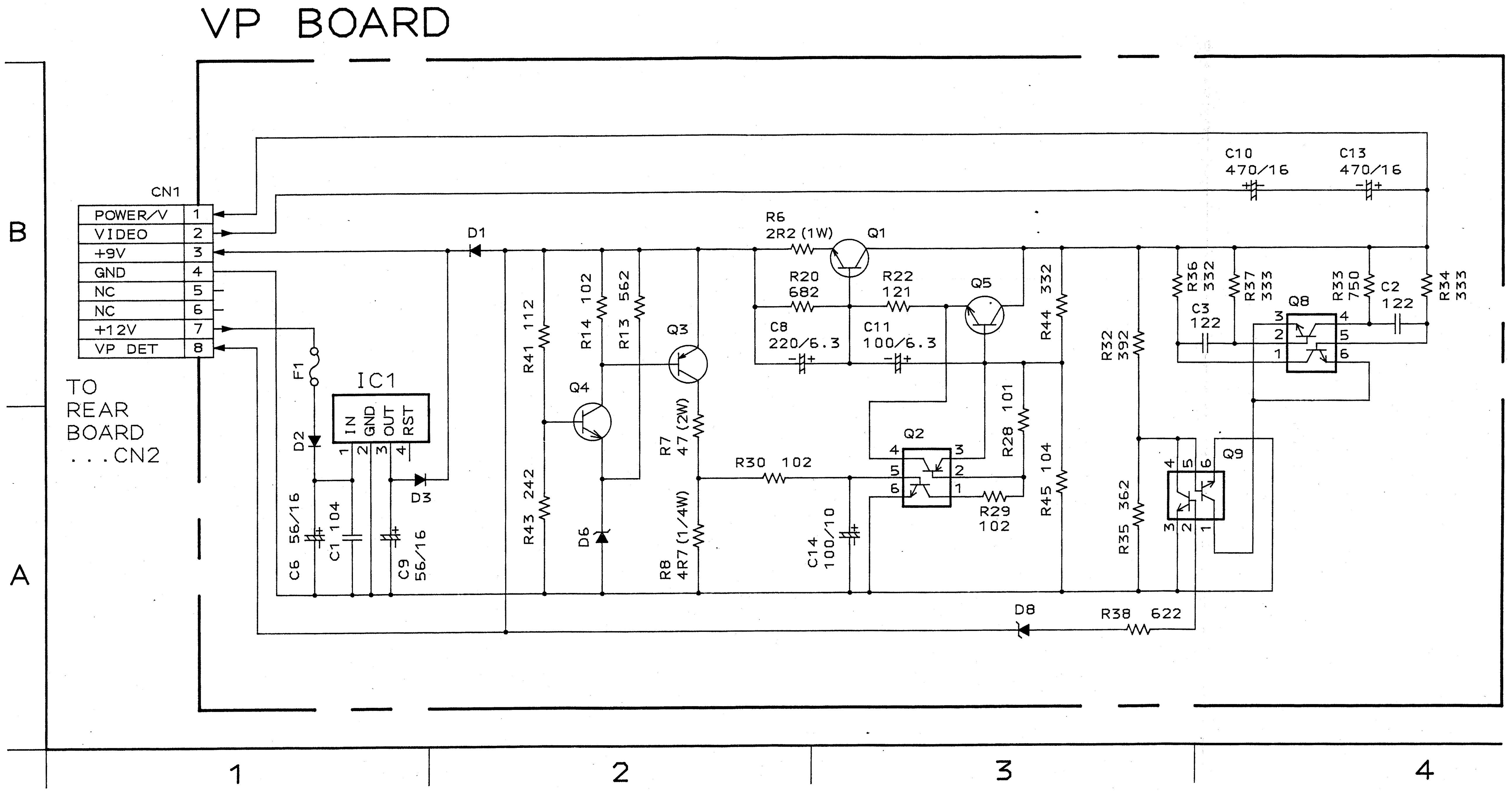
(PATTERN SIDE VIEW)

<Index>

VP BOARD
(WV-CP412 ONLY)

IC1	A2
Q1	A2
Q2	A4
Q3	A4
Q4	B4
Q5	A4
Q8	B5
Q9	A5
D1	A4
D2	B4
D3	A4
D6	B4
D8	A5

SCHEMATIC DIAGRAM OF VP BOARD (WV-CP412)


VP BOARD
CN1
POWER/V 1
VIDEO 2
+9V 3
GND 4
NC 5
NC 6
+12V 7
VP DET 8
TO REAR BOARD . . . CN2
F1
D2
IC1
IN GND OUT RST
1 2 3 4
C6 56/16
C1 104
C9 56/16
D3
D1
R41 112
R43 242
R14 102
R13 562
Q4
D6
Q3
R7 47 (2W)
R8 4R7 (1/4W)
R6 2R2 (1W)
Q1
R20 682
R22 121
C8 220/6.3
C11 100/6.3
Q5
R30 102
C14 100/10
Q2
R29 102
R28 101
R44 332
R45 104
D8
R38 622
R32 392
R35 362
Q9
R36 332
R37 333
C3 122
Q8
R33 750
C2 122
R34 333
C10 470/16
C13 470/16
B
A
1
2
3
4

<Index>

VP BOARD
(WV-CP412 ONLY)

IC1	A1
Q1	B3
Q2	A3
Q3	B2
Q4	A2
Q5	B3
Q8	B4
Q9	A4
D1	B2
D2	A1
D3	A1
D6	A2
D8	A3

Note: **The value indicated in schematic diagram should be read as follows:**

□ □ □
Multiplier (0 - 5)
2nd. Significant Digit (0 - 9)
1st. Siginificant Digit (1 - 9)

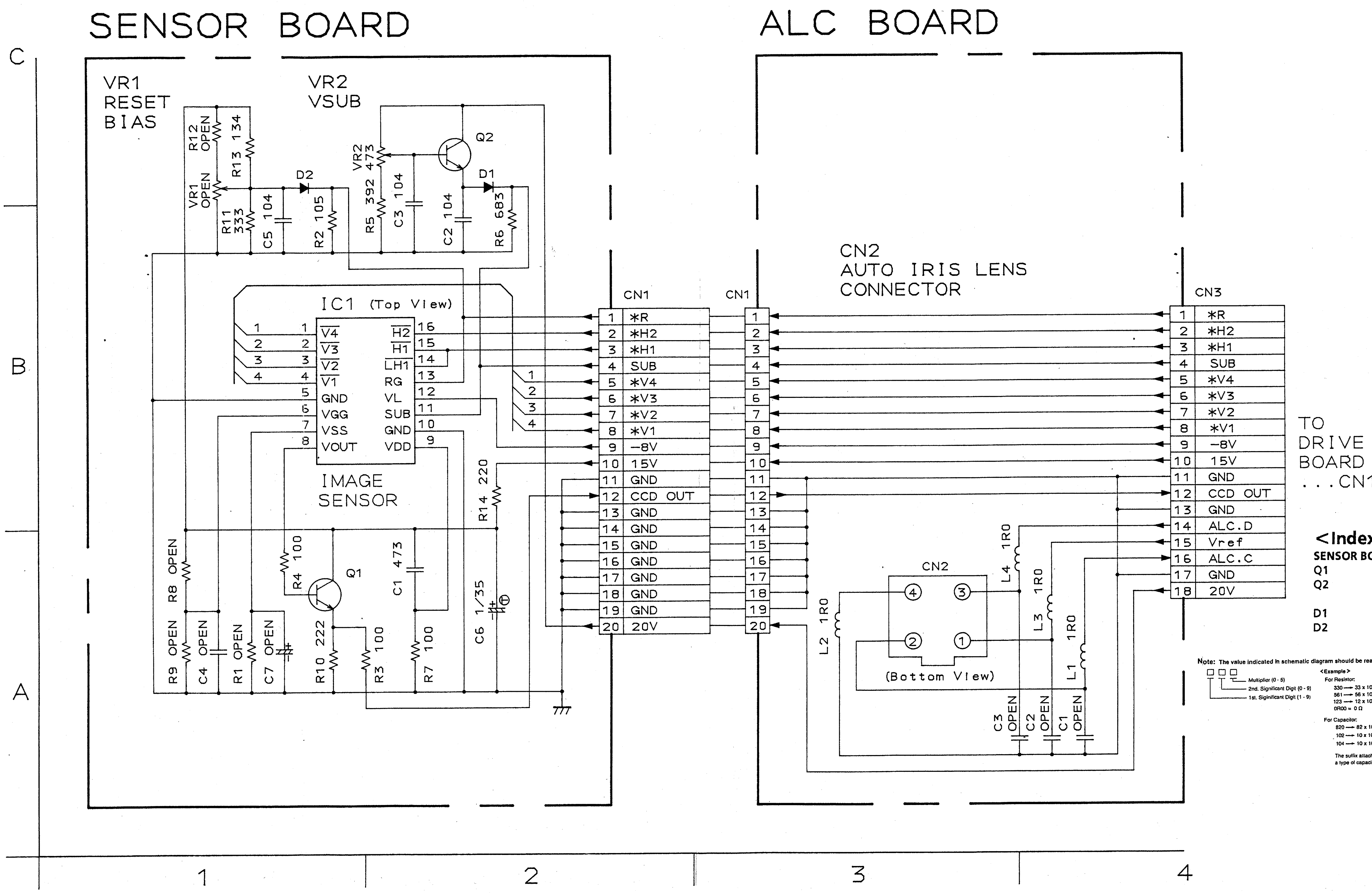
<Example>

For Resistor:
330 → 33×10^0 = 33Ω
561 → 56×10^1 = 560Ω
123 → 12×10^3 = 12kΩ
0R00 = 0 Ω

For Capacitor:
820 → 82×10^0 = 82pF
102 → 10×10^2 = 1000pF = 0.001μF
104 → 10×10^4 = 100000pF = 0.1μF

The suffix attached to capacitance indicates a type of capacitor.

SCHEMATIC DIAGRAM OF SENSOR, ALC BOARD


SENSOR BOARD
ALC BOARD
C
B
A
1
2
3
4
VR1
RESET
BIAS
VR2
VSUB
R12 OPEN
R13 134
VR1 OPEN
R11 333
C5 104
D2
R2 105
VR2 473
R5 392
C3 104
Q2
D1
C2 104
R6 683
IC1 (Top View)
1 V4
2 V3
3 V2
4 V1
5 GND
6 VGG
7 VSS
8 VOUT
16 H2
15 H1
14 LH1
13 RG
12 VL
11 SUB
10 GND
9 VDD
IMAGE
SENSOR
R14 220
R8 OPEN
R4 100
Q1
C1 473
C6 1/35
R9 OPEN
C4 OPEN
R1 OPEN
C7 OPEN
R10 222
R3 100
R7 100
CN1
1 *R
2 *H2
3 *H1
4 SUB
5 *V4
6 *V3
7 *V2
8 *V1
9 −8V
10 15V
11 GND
12 CCD OUT
13 GND
14 GND
15 GND
16 GND
17 GND
18 GND
19 GND
20 20V
CN1
CN2
AUTO IRIS LENS
CONNECTOR
CN2
(Bottom View)
L4 1R0
L3 1R0
L2 1R0
L1 1R0
C3 OPEN
C2 OPEN
C1 OPEN
CN3
1 *R
2 *H2
3 *H1
4 SUB
5 *V4
6 *V3
7 *V2
8 *V1
9 −8V
10 15V
11 GND
12 CCD OUT
13 GND
14 ALC.D
15 Vref
16 ALC.C
17 GND
18 20V
TO
DRIVE
BOARD
...CN1

<Index>

SENSOR BOARD

Q1	A1
Q2	C2
D1	C2
D2	C1

Note: The value indicated in schematic diagram should be read as follows:

□ □ □
- Multiplier (0 - 5)
- 2nd. Significant Digit (0 - 9)
- 1st. Siginificant Digit (1 - 9)

<Example>

For Resistor:

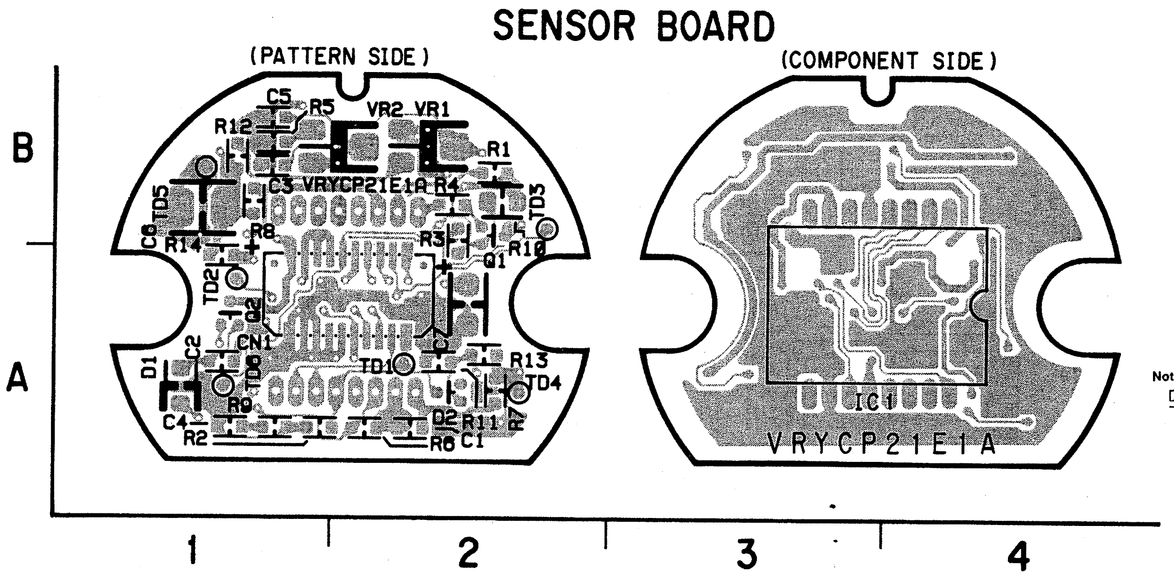
330 → 33×10^0 = 33Ω
561 → 56×10^1 = 560Ω
123 → 12×10^3 = 12kΩ
0R00 = 0 Ω

For Capacitor:

820 → 82×10^0 = 82pF
102 → 10×10^2 = 1000pF = 0.001μF
104 → 10×10^4 = 100000pF = 0.1μF

The suffix attached to capacitance indicates a type of capacitor.

CONDUCTOR VIEW OF SENSOR BOARD


SENSOR BOARD
(PATTERN SIDE)
(COMPONENT SIDE)
B
A
1
2
3
4
C5
R5
VR2
VR1
R12
R1
C3 VRYCP21E1A R4
TD5
TD3
C6
R14
R8
R3
R10
TD2
Q2
Q1
CN1
D1
C2
TD1
R13
TD4
TD6
R9
D2
R11
C4
R2
R6
C1
R7
IC1
VRYCP21E1A

<Index>

SENSOR BOARD

IC1	A3
Q1	B2
Q2	A1
D1	A1
D2	A2

<Index>

REAR BOARD

D1	B2

Note: The value indicated in schematic diagram should be read as follows:

□ □ □
Multiplier (0 - 5)
2nd. Significant Digit (0 - 9)
1st. Siginificant Digit (1 - 9)

<Example>

For Resistor:

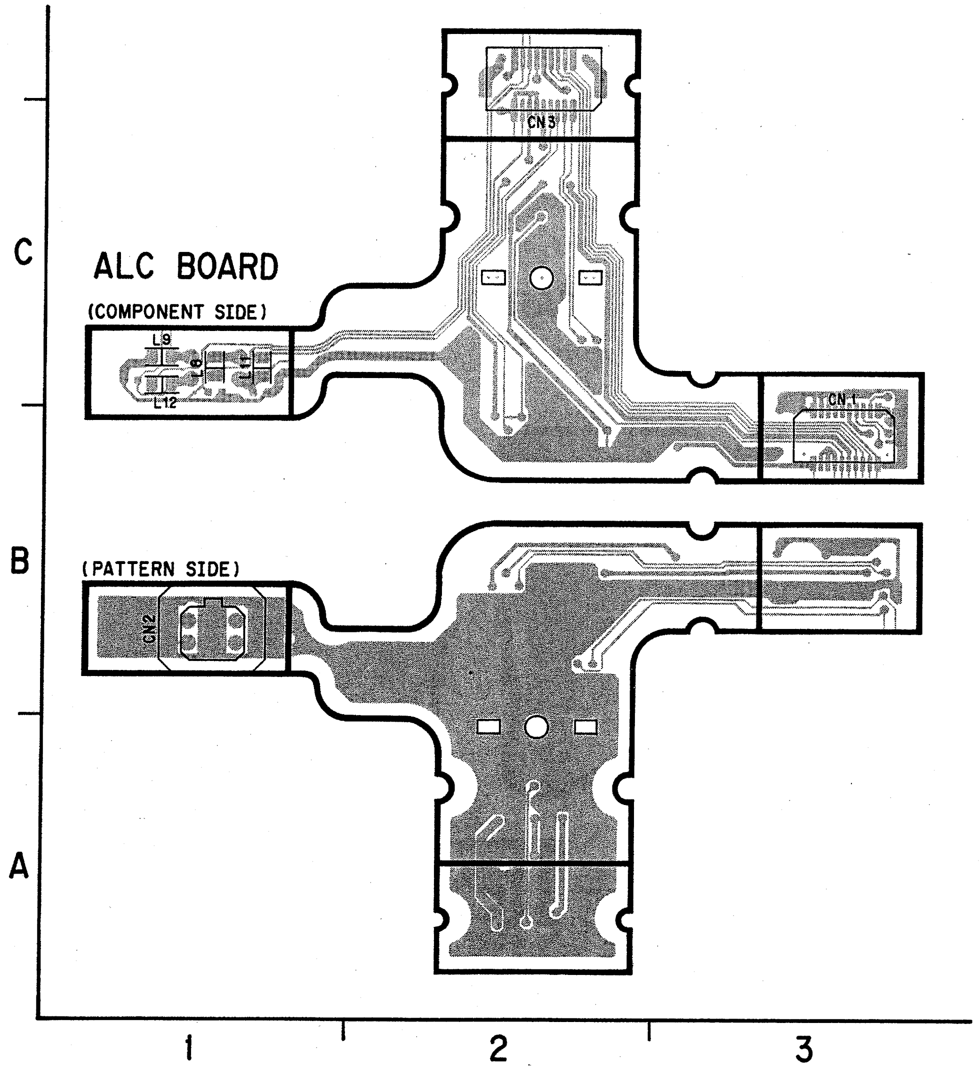
330 → 33 x 10^0 = 33Ω
561 → 56 x 10^1 = 560Ω
123 → 12 x 10^3 = 12kΩ
0R00 = 0 Ω

For Capacitor:

820 → 82 x 10^0 = 82pF
102 → 10 x 10^2 = 1000pF = 0.001μF
104 → 10 x 10^4 = 100000pF = 0.1μF

The suffix attached to capacitance indicates a type of capacitor.

CONDUCTOR VIEW OF ALC BOARD

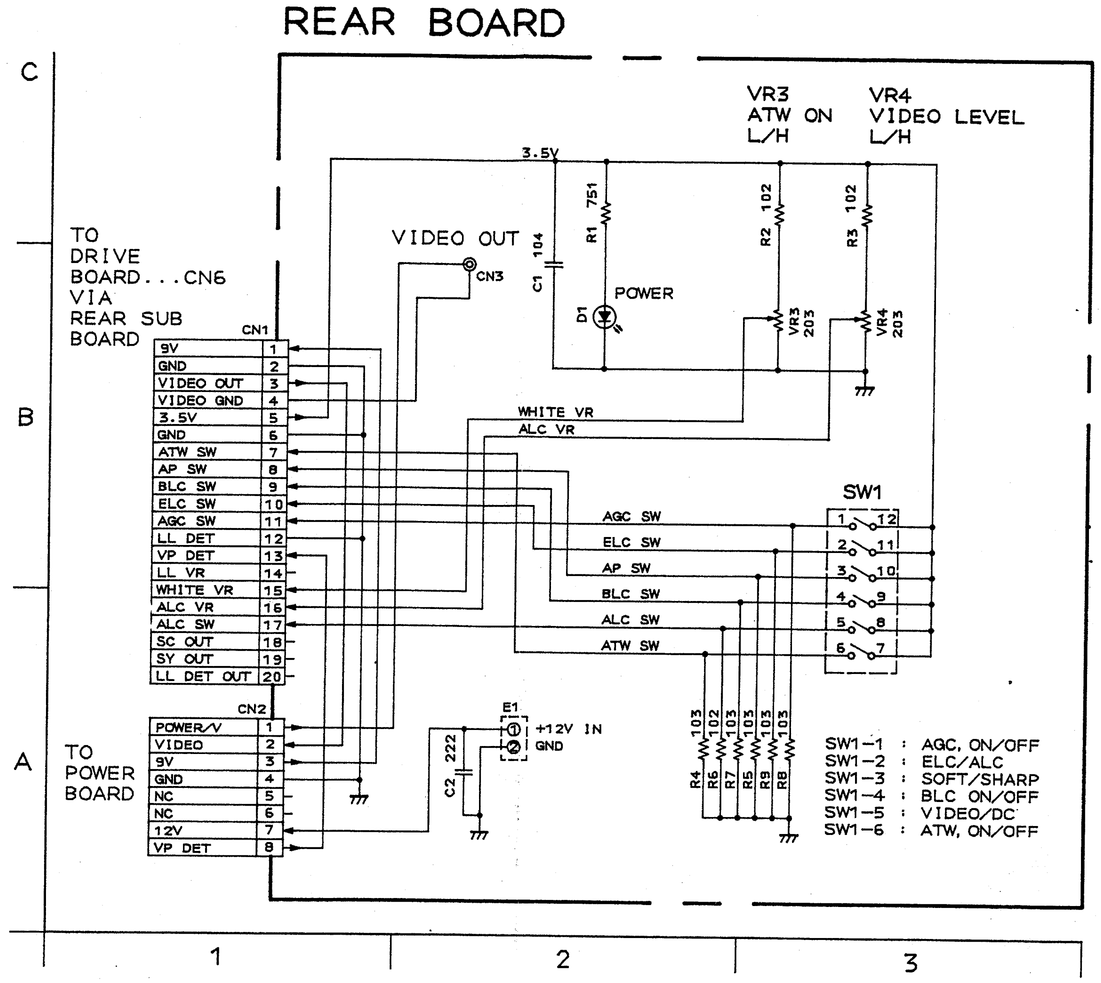

ALC BOARD
(COMPONENT SIDE)
(PATTERN SIDE)
CN3
CN1
CN2
L9
L12
C
B
A
1
2
3

<Index>

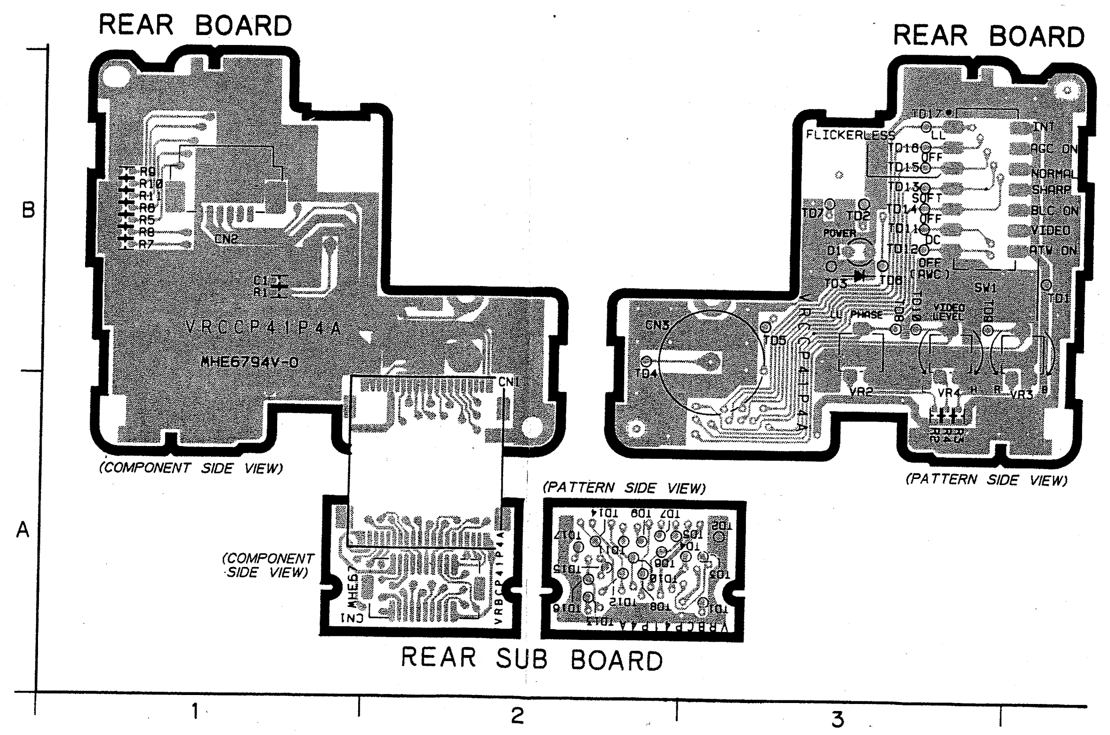
REAR BOARD

D1	B3

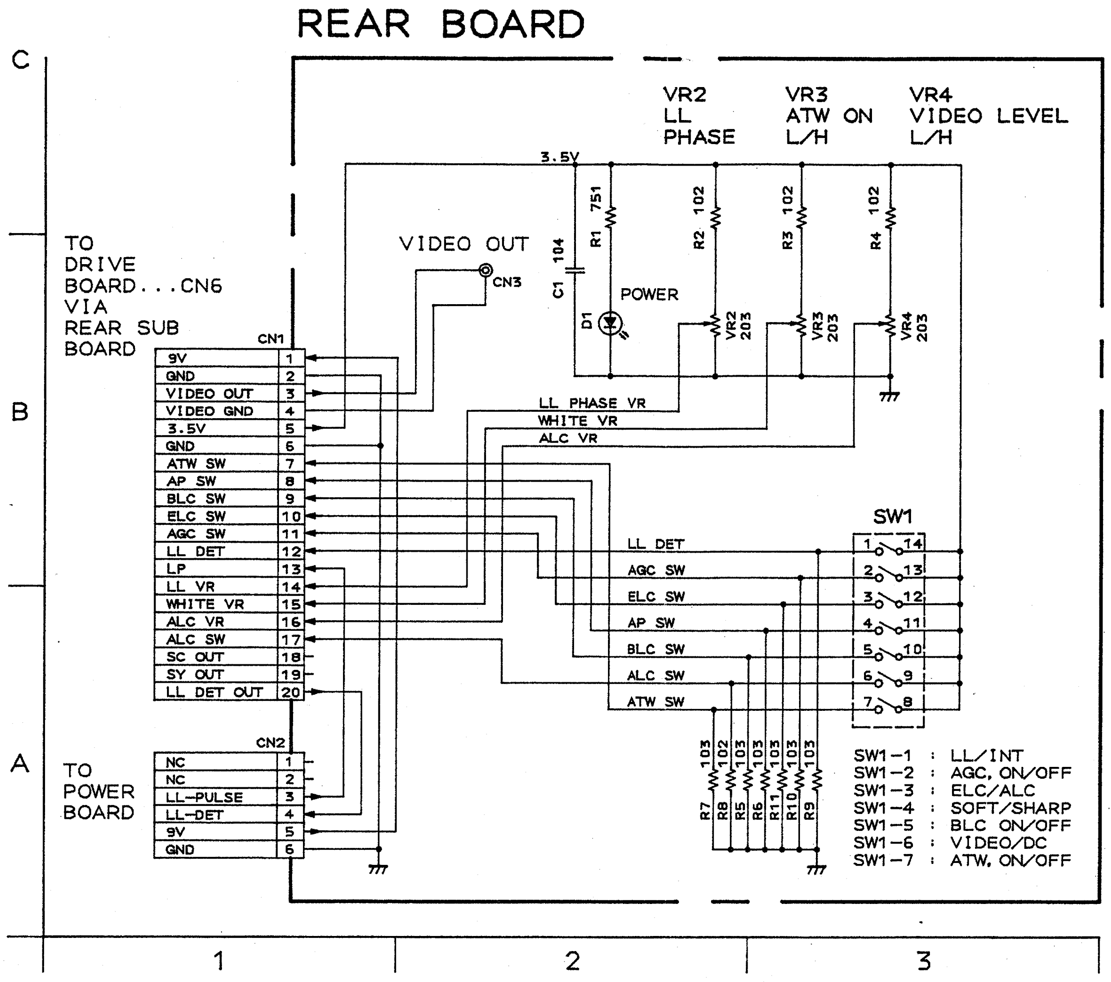
SCHEMATIC DIAGRAM OF REAR BOARD (WV-CP410)


REAR BOARD
C
B
A
1
2
3
TO DRIVE BOARD...CN6 VIA REAR SUB BOARD
TO POWER BOARD
CN1
9V
GND
VIDEO OUT
VIDEO GND
3.5V
GND
ATW SW
AP SW
BLC SW
ELC SW
AGC SW
LL DET
VP DET
LL VR
WHITE VR
ALC VR
ALC SW
SC OUT
SY OUT
LL DET OUT
CN2
POWER/V
VIDEO
9V
GND
NC
NC
12V
VP DET
VIDEO OUT
CN3
3.5V
C1 104
R1 751
D1
POWER
VR3 ATW ON L/H
VR4 VIDEO LEVEL L/H
R2 102
R3 102
VR3 203
VR4 203
WHITE VR
ALC VR
SW1
AGC SW
ELC SW
AP SW
BLC SW
ALC SW
ATW SW
E1
+12V IN
GND
C2 222
R4 103
R6 102
R7 103
R5 103
R8 103
R9 103
SW1-1 : AGC, ON/OFF
SW1-2 : ELC/ALC
SW1-3 : SOFT/SHARP
SW1-4 : BLC ON/OFF
SW1-5 : VIDEO/DC
SW1-6 : ATW, ON/OFF

CONDUCTOR VIEW OF REAR BOARD (WV-CP410)


REAR BOARD
REAR BOARD
(COMPONENT SIDE VIEW)
(PATTERN SIDE VIEW)
(PATTERN SIDE VIEW)
(COMPONENT SIDE VIEW)
REAR SUB BOARD
B
A
1
2
3
R9
R10
R1
R6
R5
R8
R7
CN2
C1
R1
VRCCP41P4A
MHE6794V-0
CN1
CN3
TD4
TD5
FLICKERLESS
LL
OFF
INT
AGC ON
NORMAL
SHARP
SOFT
BLC ON
VIDEO
DC
ATW ON
POWER
D1
TD7
TD2
SW1
PHASE
VIDEO LEVEL
VR2
VR4
TD1
TD3
TD6
TD8
TD9
TD10
TD11
TD12
TD13
TD14
TD15
TD16
TD17
CN
MHE67
VRBCP41P4A

SCHEMATIC DIAGRAM OF REAR BOARD (WV-CP412)


REAR BOARD
VR2 LL PHASE
VR3 ATW ON L/H
VR4 VIDEO LEVEL L/H
3.5V
VIDEO OUT
CN3
C1 104
R1 751
D1
POWER
R2 102
R3 102
R4 102
VR2 203
VR3 203
VR4 203
TO DRIVE BOARD...CN6 VIA REAR SUB BOARD
CN1
9V 1
GND 2
VIDEO OUT 3
VIDEO GND 4
3.5V 5
GND 6
ATW SW 7
AP SW 8
BLC SW 9
ELC SW 10
AGC SW 11
LL DET 12
LP 13
LL VR 14
WHITE VR 15
ALC VR 16
ALC SW 17
SC OUT 18
SY OUT 19
LL DET OUT 20
LL PHASE VR
WHITE VR
ALC VR
SW1
LL DET
AGC SW
ELC SW
AP SW
BLC SW
ALC SW
ATW SW
R7 R8 R5 R6 R11 R10 R9 103
TO POWER BOARD
CN2
NC 1
NC 2
LL-PULSE 3
LL-DET 4
9V 5
GND 6
SW1-1 : LL/INT
SW1-2 : AGC, ON/OFF
SW1-3 : ELC/ALC
SW1-4 : SOFT/SHARP
SW1-5 : BLC ON/OFF
SW1-6 : VIDEO/DC
SW1-7 : ATW, ON/OFF
C
B
A
1
2
3

Note: The value indicated in schematic diagram should be read as follows:

□ □ □
Multiplier (0 - 5)
2nd. Significant Digit (0 - 9)
1st. Siginificant Digit (1 - 9)

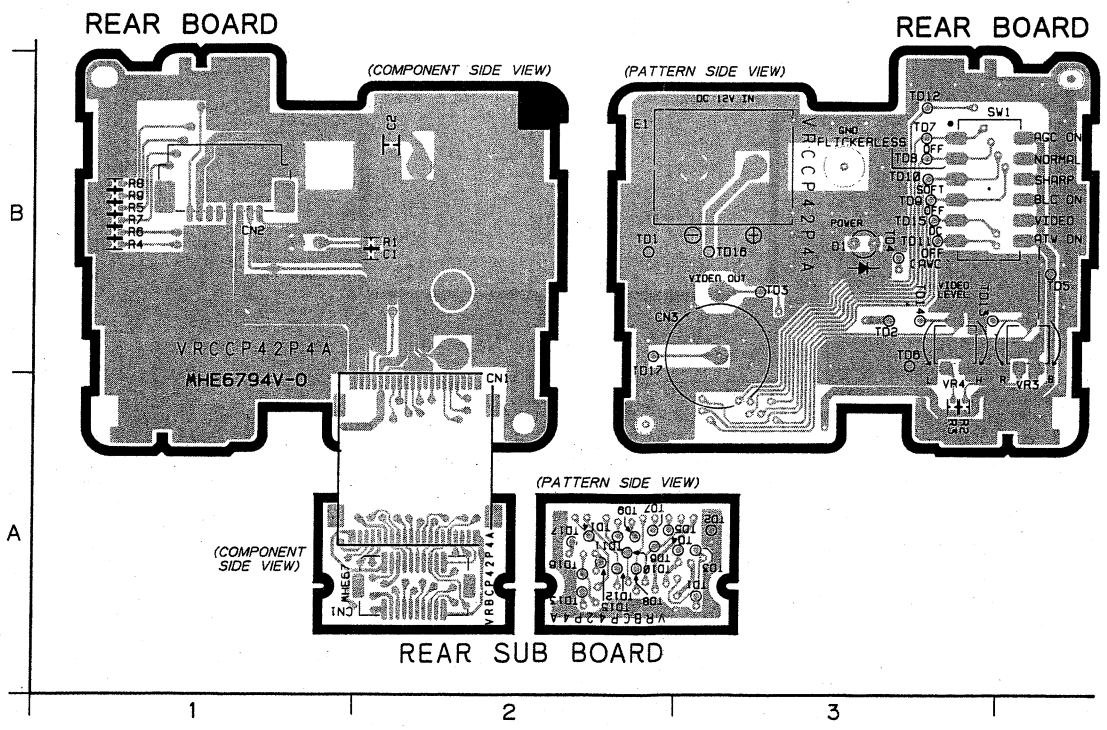
<Example>

For Resistor:
330 → 33 x 10^0 = 33Ω
561 → 56 x 10^1 = 560Ω
123 → 12 x 10^3 = 12kΩ
0R00 = 0 Ω

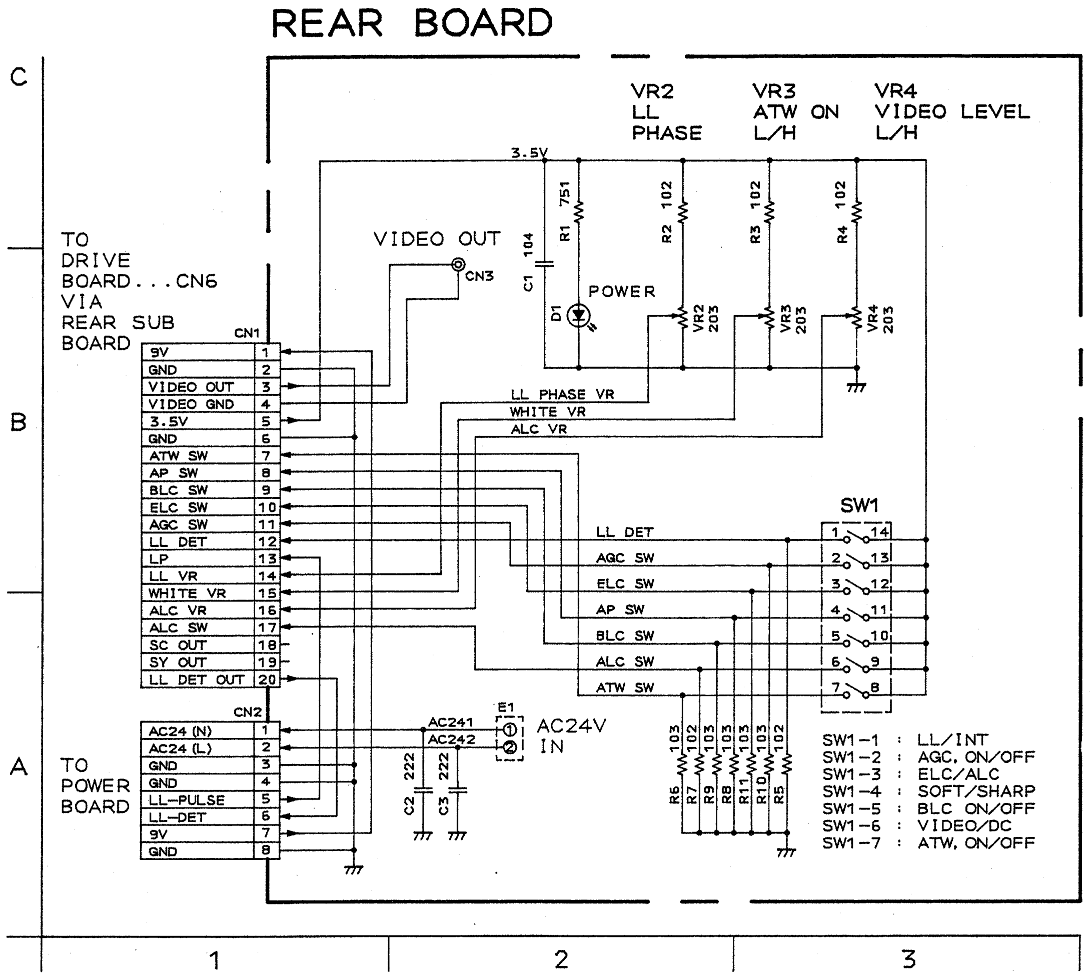
For Capacitor:
820 → 82 x 10^0 = 82pF
102 → 10 x 10^2 = 1000pF = 0.001μF
104 → 10 x 10^4 = 100000pF = 0.1μF

The suffix attached to capacitance indicates a type of capacitor.

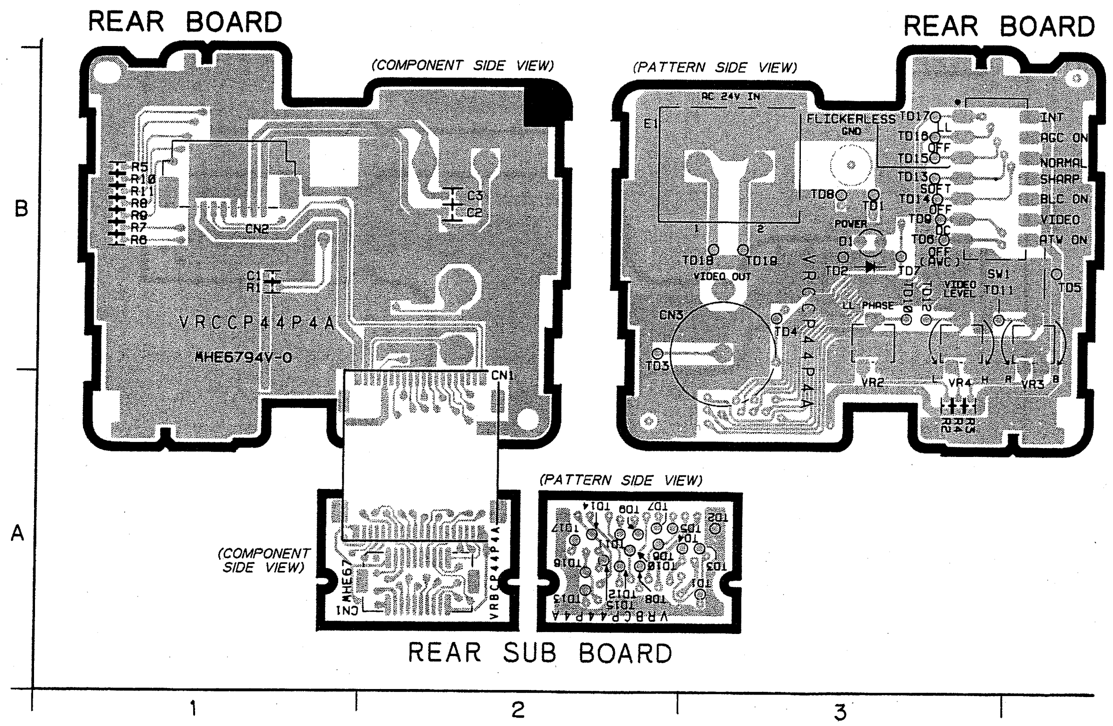
CONDUCTOR VIEW OF REAR BOARD (WV-CP412)


REAR BOARD
(COMPONENT SIDE VIEW)
REAR BOARD
(PATTERN SIDE VIEW)
DC 12V IN
E1
GND
FLICKERLESS
SW1
AGC ON
NORMAL
SHARP
BLC ON
VIDEO
ATW ON
POWER
VIDEO OUT
CN3
VIDEO LEVEL
VR4
VR3
VRCCP42P4A
MHE6794V-0
CN1
CN2
C2
R1
C1
(COMPONENT SIDE VIEW)
(PATTERN SIDE VIEW)
REAR SUB BOARD
B
A
1
2
3

SCHEMATIC DIAGRAM OF REAR BOARD (WV-CP414)

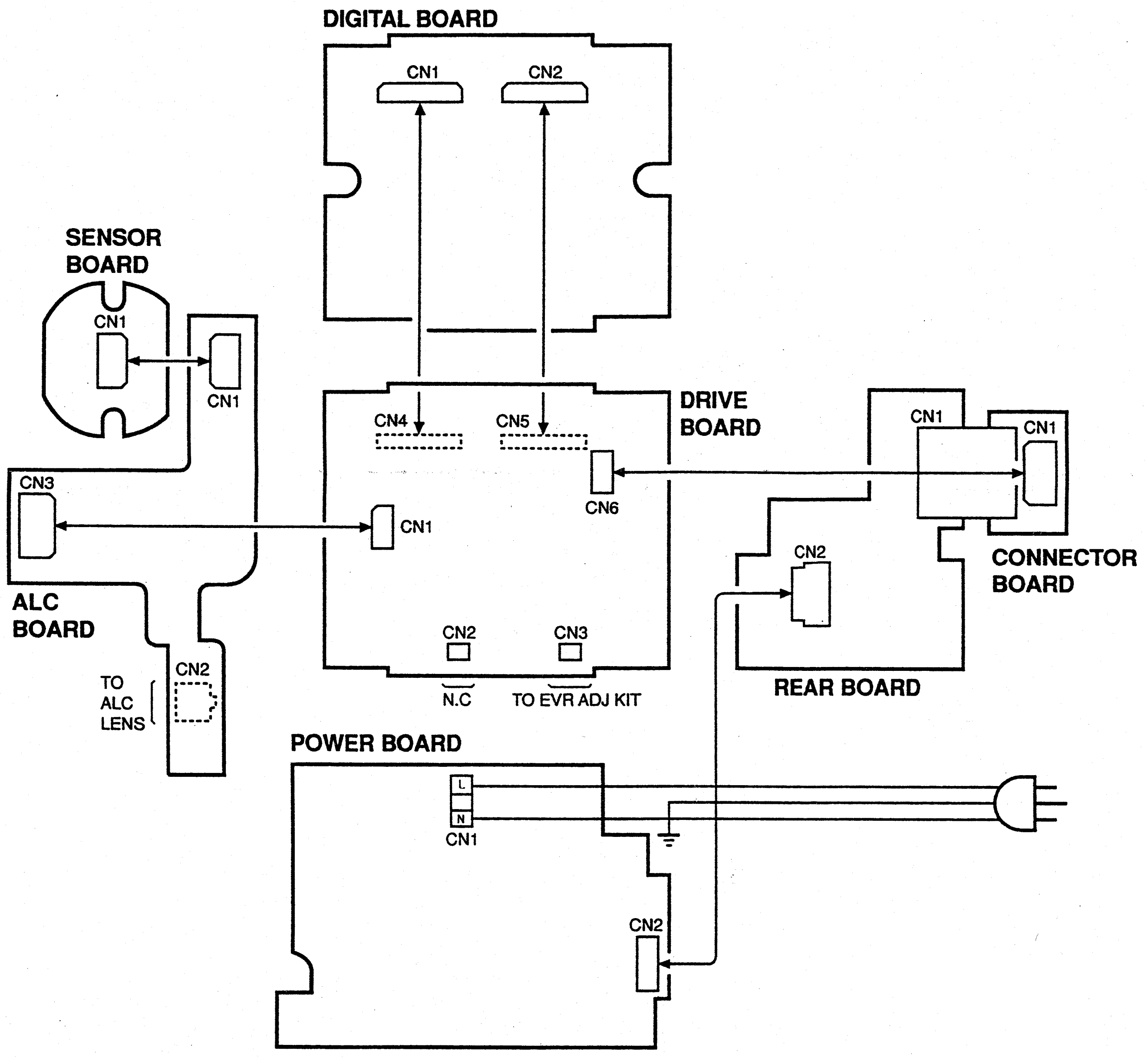

REAR BOARD
VR2 LL PHASE
VR3 ATW ON L/H
VR4 VIDEO LEVEL L/H
3.5V
VIDEO OUT
CN3
C1 104
R1 751
D1
POWER
R2 102
R3 102
R4 102
VR2 203
VR3 203
VR4 203
TO DRIVE BOARD...CN6 VIA REAR SUB BOARD
CN1
9V 1
GND 2
VIDEO OUT 3
VIDEO GND 4
3.5V 5
GND 6
ATW SW 7
AP SW 8
BLC SW 9
ELC SW 10
AGC SW 11
LL DET 12
LP 13
LL VR 14
WHITE VR 15
ALC VR 16
ALC SW 17
SC OUT 18
SY OUT 19
LL DET OUT 20
LL PHASE VR
WHITE VR
ALC VR
SW1
LL DET
AGC SW
ELC SW
AP SW
BLC SW
ALC SW
ATW SW
E1
AC241
AC242
AC24V IN
C2 222
C3 222
R6 R7 R8 R9 R11 R10 R5 103
TO POWER BOARD
CN2
AC24 (N) 1
AC24 (L) 2
GND 3
GND 4
LL-PULSE 5
LL-DET 6
9V 7
GND 8
SW1-1 : LL/INT
SW1-2 : AGC, ON/OFF
SW1-3 : ELC/ALC
SW1-4 : SOFT/SHARP
SW1-5 : BLC ON/OFF
SW1-6 : VIDEO/DC
SW1-7 : ATW, ON/OFF
C
B
A
1
2
3

CONDUCTOR VIEW OF REAR BOARD (WV-CP414)

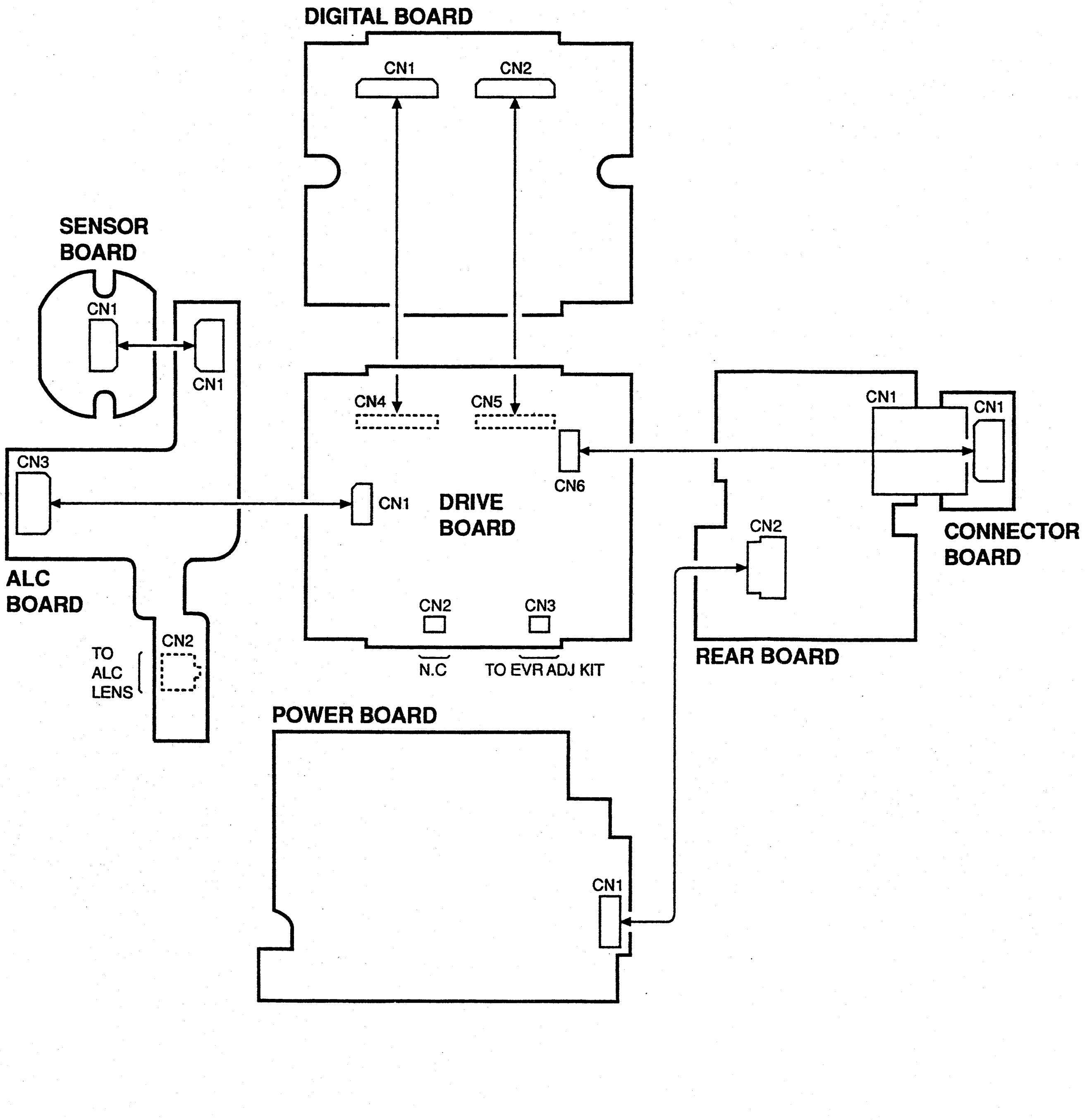

REAR BOARD
(COMPONENT SIDE VIEW)
REAR BOARD
(PATTERN SIDE VIEW)
AC 24V IN
E1
FLICKERLESS
GND
INT
AGC ON
NORMAL
SHARP
BLC ON
VIDEO
ATW ON
POWER
VIDEO OUT
CN3
LL PHASE
VIDEO LEVEL
VR2
VR4
VR3
VRCCP44P4A
MHE6794V-0
CN1
CN2
C3
C2
C1
R1
(COMPONENT SIDE VIEW)
(PATTERN SIDE VIEW)
REAR SUB BOARD
B
A
1
2
3

WIRING DIAGRAM

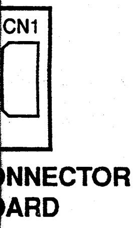
WV−CP410

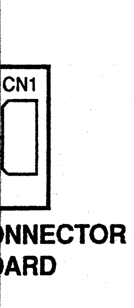

DIGITAL BOARD
CN1
CN2
SENSOR BOARD
CN1
CN1
DRIVE BOARD
CN4
CN5
CN6
CN1
CN3
ALC BOARD
CN2
TO ALC LENS
CN2
CN3
N.C
TO EVR ADJ KIT
CN1
CN1
CONNECTOR BOARD
CN2
REAR BOARD
POWER BOARD
L
N
CN1
CN2

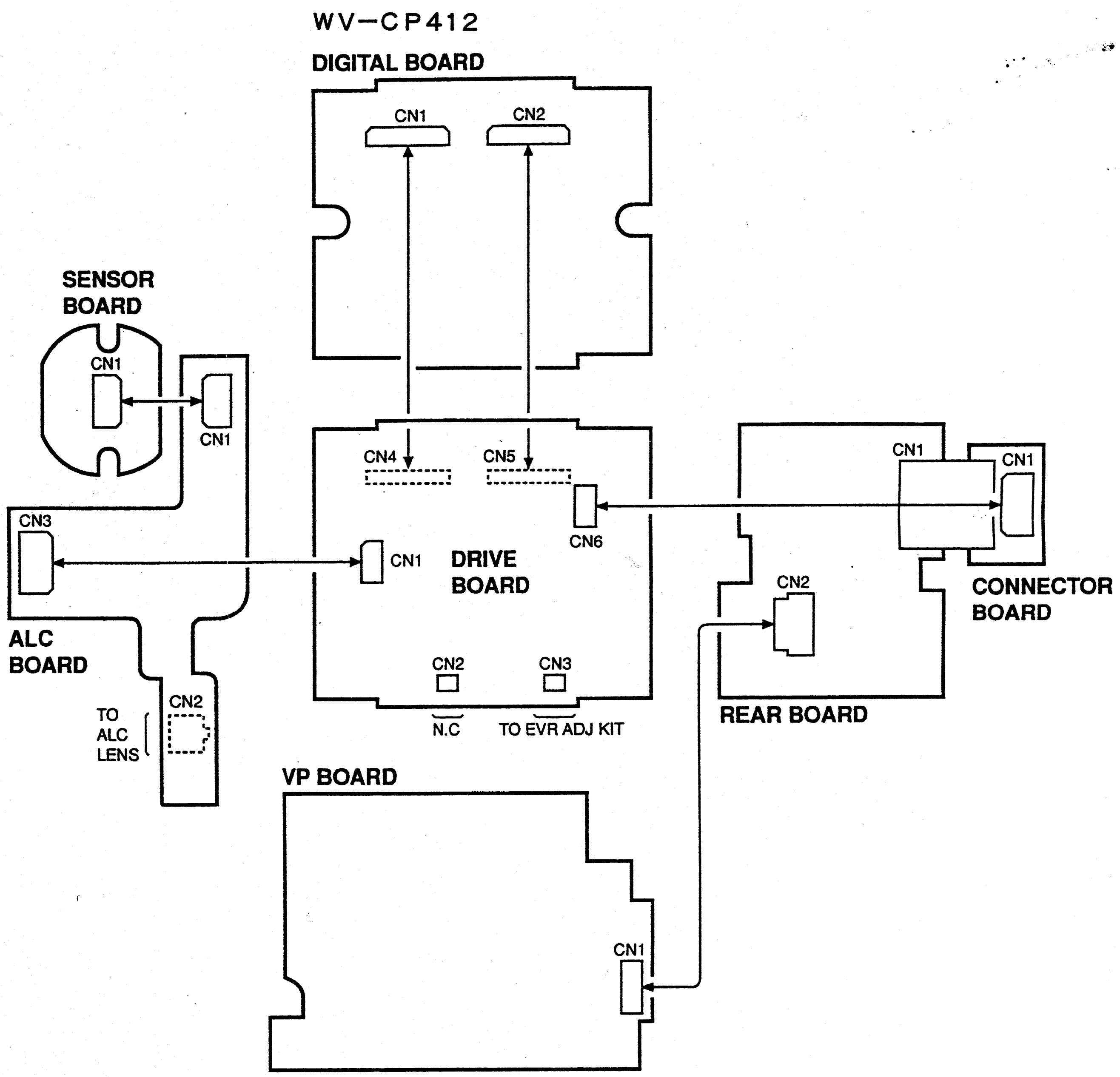
WV−CP414


DIGITAL BOARD
CN1
CN2
SENSOR BOARD
CN1
CN1
CN4
CN5
CN6
CN3
CN1
DRIVE BOARD
ALC BOARD
CN2
TO ALC LENS
CN2
CN3
N.C
TO EVR ADJ KIT
CN1
CN1
CONNECTOR BOARD
CN2
REAR BOARD
POWER BOARD
CN1

WIRING DIAGRAM


CN1
NNECTOR
ARD

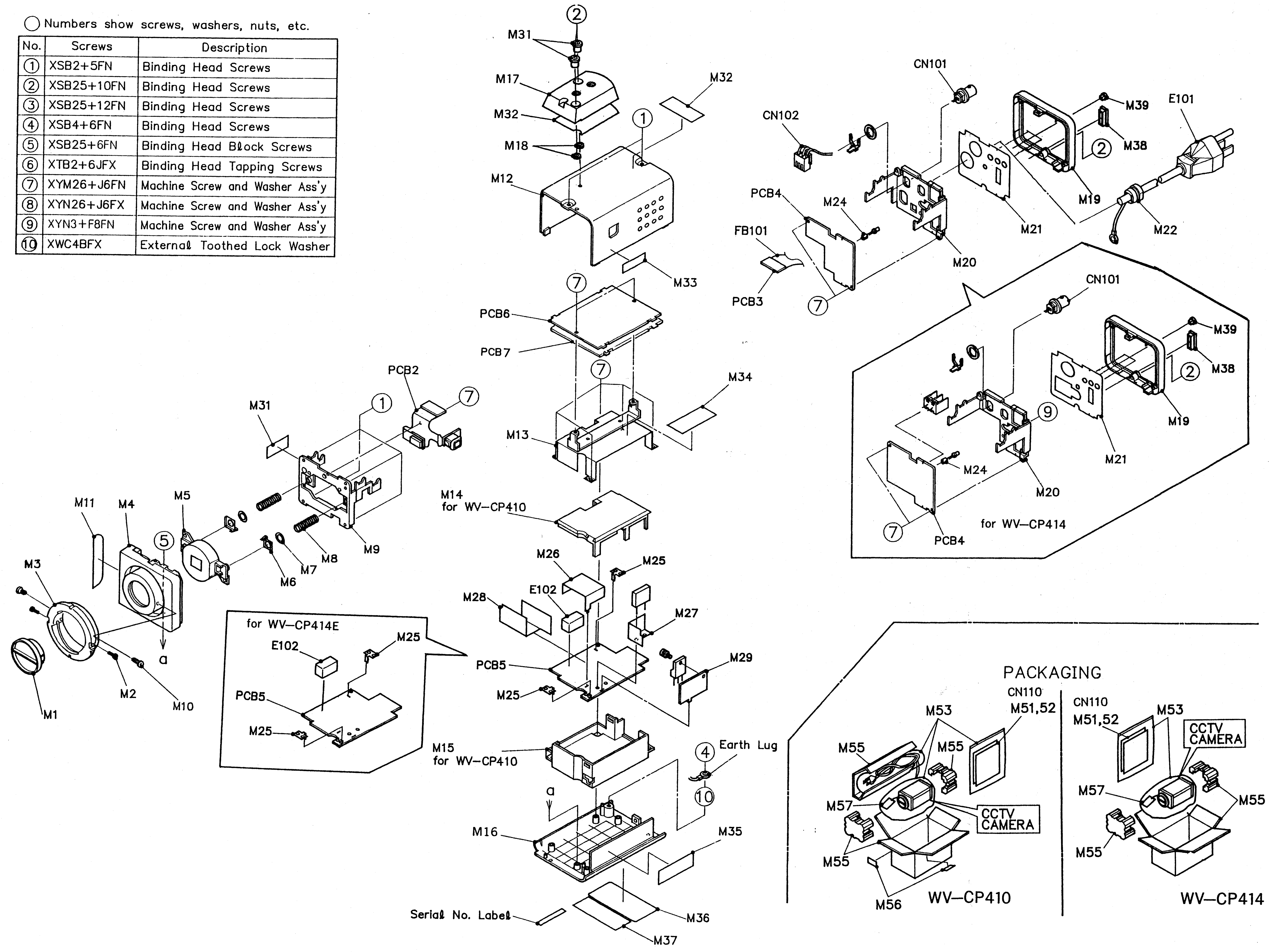

CN1
NNECTOR
ARD


WV−CP412
DIGITAL BOARD
CN1
CN2
SENSOR BOARD
CN1
CN1
CN3
ALC BOARD
CN2
TO ALC LENS
CN4
CN5
CN6
CN1
DRIVE BOARD
CN2
CN3
N.C
TO EVR ADJ KIT
VP BOARD
CN1
CN1
CN1
CN2
CONNECTOR BOARD
REAR BOARD

EXPLODED VIEW for WV-CP410 / WV-CP414

○ Numbers show screws, washers, nuts, etc.

No.	Screws	Description
①	XSB2+5FN	Binding Head Screws
②	XSB25+10FN	Binding Head Screws
③	XSB25+12FN	Binding Head Screws
④	XSB4+6FN	Binding Head Screws
⑤	XSB25+6FN	Binding Head Block Screws
⑥	XTB2+6JFX	Binding Head Tapping Screws
⑦	XYM26+J6FN	Machine Screw and Washer Ass'y
⑧	XYN26+J6FX	Machine Screw and Washer Ass'y
⑨	XYN3+F8FN	Machine Screw and Washer Ass'y
⑩	XWC4BFX	External Toothed Lock Washer

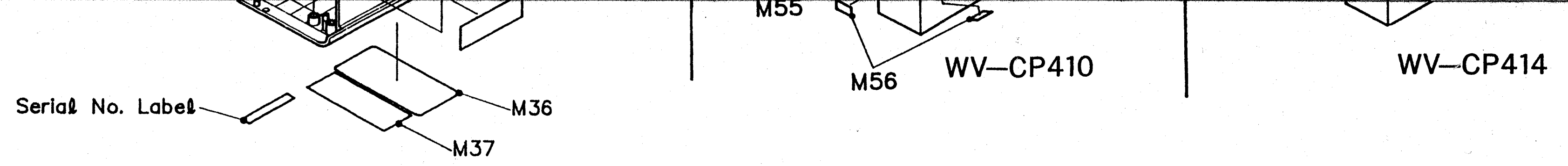


②
M31
M17
M32
M32
①
M18
M12
M33
⑦
PCB6
PCB7
⑦
M34
M13
PCB2
M31
①
⑦
M11
M4
M5
M3
⑤
M9
M8
M7
M6
M1
M2
M10
a
M14
for WV-CP410
M26
M25
E102
M28
M27
PCB5
M29
M25
for WV-CP414E
E102
M25
PCB5
M25
M15
for WV-CP410
Earth Lug
④
⑩
a
M16
M35
Serial No. Label
M36
M37
CN101
CN102
M39
E101
M38
②
PCB4
M24
M19
FB101
M21
M22
M20
PCB3
⑦
CN101
M39
M38
②
⑨
M19
M21
M24
M20
for WV-CP414
⑦
PCB4
PACKAGING
CN110
M51,52
M53
CN110
M51,52
M53
CCTV CAMERA
M55
M55
M57
CCTV CAMERA
M57
M55
M55
M55
M55
M56
WV-CP410
WV-CP414

EXPLODED VIEW for WV-CP412

○ Numbers show screws, washers, nuts, etc.

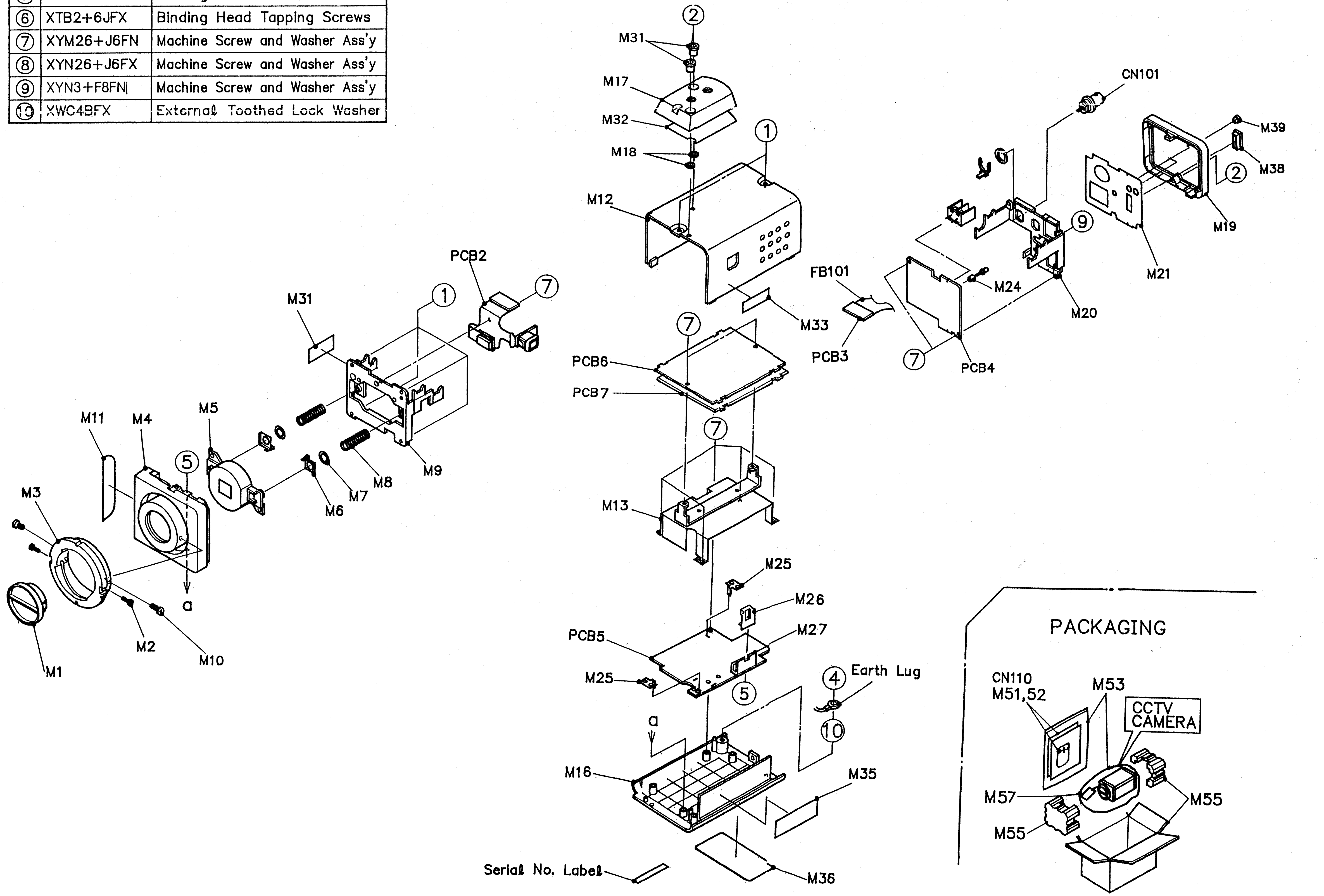
No.	Screws	Description
①	XSB2+5FN	Binding Head Screws


M55
M56
WV—CP410
WV—CP414
Serial No. Label
M36
M37

○ Numbers show screws, washers, nuts, etc.

No.	Screws	Description
①	XSB2+5FN	Binding Head Screws
②	XSB25+10FN	Binding Head Screws
③	XSB25+12FN	Binding Head Screws
④	XSB4+6FN	Binding Head Screws
⑤	XSB25+6FN	Binding Head Block Screws
⑥	XTB2+6JFX	Binding Head Tapping Screws
⑦	XYM26+J6FN	Machine Screw and Washer Ass'y
⑧	XYN26+J6FX	Machine Screw and Washer Ass'y
⑨	XYN3+F8FN	Machine Screw and Washer Ass'y
⑩	XWC4BFX	External Toothed Lock Washer

EXPLODED VIEW for WV-CP412


②
M31
M17
M32
①
M18
M12
CN101
M39
M38
②
M19
M21
⑨
M24
M20
FB101
M33
PCB3
⑦
PCB4
⑦
PCB6
PCB7
⑦
M13
PCB2
⑦
①
M31
M11
M4
M5
⑤
M3
M9
M8
M7
M6
M2
M10
M1
a
M25
M26
M27
PCB5
M25
⑤
④
Earth Lug
⑩
a
M16
M35
Serial No. Label
M36
PACKAGING
CN110
M51,52
M53
CCTV
CAMERA
M57
M55
M55

REPLACEMENT PARTS LIST

Important Notice

1. Components identified by "<!>" mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
2. RTL : Retention Time Limited,

COLOR CCTV CAMERA WV-CP410

MISCELLANEOUS

REF.NO.	PART NO.	DESCRIPTION
FB101	YWCP210J1A	Flexible Board
CN101	YWP2270	BNC Connector
CN102	YWVAR2	2-pin Connector
E101 <!>	YWKP551SXA	Power Cable Assy for WV-CP410/A
	YWKP610SXB	Power Cable Assy for WV-CP410/B
	YWKP4819DSXG	Power Cable Assy for WV-CP410/G
E102	YW840522	Insulator Fuse Cover
M1	YWBC-2B	Body Cap
M2	YWV1EB0127A4	Special Screw for FB Lock
M3	YWV3FA0178A3	FB Control Ring
M4	YWV5BA0128A2	Front Escutcheon
M5	YWVAKA1270AN	Optical Head Assy
M6	YWV4JA0479A4	Spring Plate
M7	YWV2CA0386A4	Hold Plate
M8	YWV4JA0262A4	Spring Coil
M9	YWV2SA2640A3	Front Mounting Angle
M10	YWV1EA0128A4	Special Screw
M11	YWV5WC1584A4	Front Side Panel
M12	YWV5EA1363A2	Upper Cover
M13	YWV2HA1168A3	Shield Mounting Angle
M14	YWV6EA0196A3	Shieled Cover A
M15	YWV5KA1357A3	Shieled Case B
M16	YWV2KA0874A2	Bottom Cover
M17	YWV2TB0333A3	Mounting Bracket
M18	YWV1KA0128A4	Washer
M19	YWV5BA0121A3	Rear Escutcheon
M20	YWV2SA2641A3	Mounting Angle
M21	YWV5WA1624A4	Rear Panel
M22	YWSR6W1	Cord Clamp
M31	YFV2NA0084A4	Spacer
M32	YWV2PA0615A4	Insulator Sheet
M33	YWV7SA1977A4	Model Label
M35	YWV7MA0412A4	Fuse Change Label
M36 <!>	YWV7QA3379A4	Main Label for WV-CP410/A
	YWV7QA3377A4	Main Label for WV-CP410/B
	YWV7QA3378A4	Main Label for WV-CP410/G
M38	YWV5GA0162A4	Cap for Switch
M39	YWV5GA0156A4	Cap for VR

ALC BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB2 (RTL)	YWVKYCP41E5A	Printed Circuit Board Assy
L1-4	YWNL251R0J	Coil 1 µH
CN1	AXN420330P	20-pin Connector
CN2	YFD4151N200	ALC 4-pin Connector
CN3	YW525881890	18-pin Connector

REAR SUB BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB3 (RTL)	YWVKBCP41P4A	Printed Circuit Board Assy
CN1	YW525882090	20-pin Connector

REAR BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB4 (RTL)	YWVKCCP41P4A	Printed Circuit Board Assy
D1	LN28RPPN	LED
R1	ERJ3GEYJ751	Carbon 750 ohms 1/16W
R2-4	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R5-7	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R8	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R9-11	ERJ3GEYJ103	Carbon 10K ohms 1/16W
VR2-4	YWST4TB203	Variable Resistor 20K ohms
C1	YW5F104Z2VB	Ceramic 0.1 µF
SW1	YWKSD07S	Slide Switch
CN2	YW533910690	6-pin Connector
M24	YWLH53	LED Spacer

POWER BOARD

REF.NO.	PART NO.	DESCRIPTION	
PCB5 (RTL)	YWVKYBP11E3A	Printed Circuit Board Assy	
IC1	YWFA5304S	IC	
IC2	YWTA76431S	IC	
Q1	2SK154801M	FET	
Q4	2SC2412-QRS	Transistor	
D1 <!>	S1VB60	Diode	
D2	YWDAN217	Diode	
D3	YWSC2012	Diode	
D4	YWDTZ5.1	Diode	
D5,6	YWPC111LY	Diode	
D7	YWSC80209R	Diode	
VS1 <!>	ERZC07DK471U	ZNR	
R1	ERJ14YJ114	Carbon	110K ohms 1/4W
R2	YF2116220JT	Carbon	22 ohms 1/10W
R3	YF2116184JT	Carbon	180K ohms 1/10W
R4	YF2116220JT	Carbon	22 ohms 1/10W
R5	YF2116183GT	Carbon	18K ohms 1/10W
R6	YW2116242JT	Carbon	2.4K ohms 1/10W
R7	ERJ6GEYJ221	Carbon	220 ohms 1/10W
R8	ERJ14YJ2R0	Carbon	2 ohms 1/4W
R9,10	ERJ14YJ913	Carbon	91K ohms1/4W
R11	YF2116392JT	Carbon	3.9K ohms 1/10W
R12	ERJ6GEYJ221	Carbon	220 ohms 1/10W
R13	ERJ6GEYJ102	Carbon	1K ohms 1/10W
R14	YWR1220P161D	Metal	160 ohms
R15	YWR1220P163D	Metal	16K ohms
R16	YF2116681JT	Carbon	680 ohms 1/10W
R17	YWR1220P622D	Metal	6.2K ohms
R18	ERJ6GEYJ103	Carbon	10K ohms 1/10W
R19	ERJ6GEYJ512	Carbon	5.1K ohms 1/10W
R20	YF2116124GT	Carbon	120K ohms 1/10W
R21,22	ERJ14YJ114	Carbon	110K ohms 1/4W
R23	ERJ6GEYJ363	Carbon	36K ohms 1/10W
R30	ERJ6GEY0R00	Carbon	0 ohms 1/10W
R31,32	ERJ8GCS0R00	Carbon	0 ohms 1/10W
C1	ECQU2A333MV	Plastic	0.033 µF
C2-4	ECKDRS222ME	Ceramic	2200 pF
C5	RJ3400V100M	Electrolytic	10 µF 400V
C6	ECA1VFQ270	Electrolytic	27 µF 35V
C7	YW400105FZ	Ceramic	1 µF
C8	YF400681CHJT	Ceramic	680 µF 50V
C9	YF400104FZT	Ceramic	0.1 µF
C10	ECEA1HGE3R3	Electrolytic	3.3 µF 50V
C11	YF400103XKT	Ceramic	0.01 µF
C12	YF400822XKT	Ceramic	8200 pF
C13	YF400104FZT	Ceramic	0.1 µF
C14,15	ECA1CFQ271	Electrolytic	270 µF 16V
C16	ECA1CFQ121	Electrolytic	120 µF 16V
C17	YF400104FZT	Ceramic	0.1 µF
C18,19	ECKDRS332ME	Ceramic	3300 pF
C20	ECQU2A563MT	Plastic	0.056 µF
L1	ELF23F215A	Coil	
L2	YWPC7330K	Coil	33 µH
T1 <!>	YWPC19HWA9	Power Transformer	
CN1	YWB2P3VH	2-pin Connector	
CN2	YW526630610	6-pin Connector	
F1	XBA2C04ET0A	Current Fuse	0.4A 250V
E1,2	S-N5057	Fuse Holder	
E3,4	YW851040	Insulator Cap	
M25	YWV1KA0181A4	Washer	
M26	YWV2HA1169A4	Shield Cover	
M27	YWV2PA0612A4	Insulator Plate A	
M28	YWV2PA0613A4	Insulator Plate B	
M29	YWV7DA0374B4	Heat Sink	

DRIVE BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB6 (RTL)	YWVKBCP41E2A	Printed Circuit Board Assy
IC1	AN2018S	IC
IC2	YWTC74VC04F	IC
IC3	YWC5023068E1	IC
IC4	YWCXD2404R	IC
IC6	AN2034FAP	IC
IC7	YWMB3775PFV	IC
IC8	YWC5020074E1	IC
IC10	MN3112SA	IC
IC13	YWTC74VC04FS	IC
Q1	2SK106945	FET
Q2,3	2SB766A-QR	Transistor
Q9,15	2SC4617	Transistor
Q17,18	2SB1218A-QR	Transistor
Q19	2SA1774	Transistor
Q22	2SC4617	Transistor
Q23	UMZ1	Transistor
Q24	2SA1774	Transistor
Q26,27	2SC4617	Transistor
Q28	2SA1774	Transistor
Q29	2SD1819-QRS	Transistor
Q30	2SC4617	Transistor
Q33,34	2SC4619	Transistor
Q35	2SC4617	Transistor
Q36,37	2SC4619	Transistor
D1,2	YWSC80206L	Diode
D3	YWDA121	Diode
D10,11	YWHVU359TRF	Diode
D14,15	YWDA121	Diode
D16-19	MA726	Diode
D20	MA8100	Diode

REF.NO.	PART NO.	DESCRIPTION	
D22	YWDA121	Diode	
D23	MA112	Diode	
TH72	L311F202J402	Thermistor	
TH252	L311F202J402	Thermistor	
R14	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R20	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R21	ERJ3GEYJ202	Carbon	2K ohms 1/16W
R26	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R28	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R29	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R31	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R32	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R33	ERJ3GEYJ154	Carbon	150K ohms 1/16W
R34,35	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R36,37	ERJ3GEYJ560	Carbon	56 ohms 1/16W
R38	ERJ3GEYJ241	Carbon	240 ohms 1/16W
R41	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R44	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R46	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R47	ERJ3GEYJ330	Carbon	33 ohms 1/16W
R52	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R54	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R55	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R56	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R58	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R59,60	ERJ3GEYJ562	Carbon	5.6K ohms 1/16W
R63	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R64	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R66	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R68	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R69	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R73	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R75	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R80	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R81	ERJ3GEYJ151	Carbon	150 ohms 1/16W
R90	ERJ3GEYJ182	Carbon	1.8K ohms 1/16W
R93	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W
R97	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R99	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R100	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R103	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R107,110	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R121,123	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R129,131	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R132	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R134	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R135	ERJ3GEYJ561	Carbon	560 ohms 1/16W
R136	ERJ3GEYJ682	Carbon	6.8K ohms 1/16W
R137	ERJ6GEYJ102	Carbon	1K ohms 1/10W
R138	ERJ3GEYJ243	Carbon	24K ohms 1/16W
R139	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R140	ERJ6GEYJ821	Carbon	820 ohms 1/16W
R141	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R142	ERJ3GEYJ471	Carbon	470 ohms 1/16W
R144,145	ERJ3GEY0R00	Carbon	0 ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R146	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R147,150	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R153	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R157-159	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R160	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R161	ERJ3GEYJ272	Carbon	2.7K ohms 1/16W
R162	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R163	ERJ3GEYJ751	Carbon	750 ohms 1/16W
R167	ERJ14YJ750	Carbon	75 ohms 1/4W
R168	ERJ3RHD622S	Metal	6.2K ohms 1/16W
R169	ERJ3RHD183S	Metal	18K ohms 1/16W
R170	ERJ3RHD562S	Metal	5.6K ohms 1/16W
R171	ERJ3RHD332S	Metal	3.3K ohms 1/16W
R175,176	ERJ3RHD102S	Metal	1K ohms 1/16W
R178	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R183	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R184	ERJ6GEYJ102	Carbon	1K ohms 1/10W
R185	ERJ6GEYJ821	Carbon	820 ohms 1/16W
R186-188	ERJ3GEYJ100	Carbon	10 ohms 1/16W
R189-191	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R196	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R197	ERJ3GEYJ162	Carbon	1.6K ohms 1/16W
R198	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R201	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R202	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R203	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R204	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R205	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R206	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R207	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R209	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R210	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R211	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R212	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R213-216	ERJ3GEYJ220	Carbon	22 ohms 1/16W
R217	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R218	ERJ3GEYJ363	Carbon	36K ohms 1/16W
R219	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R220	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R221,222	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R223	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R224	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R226,227	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R238	ERJ3GEYJ561	Carbon	560 ohms 1/16W
R240	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R241	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R242	ERJ3GEYJ512	Carbon	5.1K ohms 1/16W
R243	ERJ3GEYJ821	Carbon	820 ohms 1/16W
R244	ERJ3GEYJ182	Carbon	1.8K ohms 1/16W
R245	ERJ3GEYJ821	Carbon	820 ohms 1/16W
R246	ERJ3GEYJ302	Carbon	3K ohms 1/16W
R247	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R248,249	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R251	ERJ3GEYJ362	Carbon	3.6K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R252	ERJ3GEYJ202	Carbon	2K ohms 1/16W
R255,256	ERJ3GEYJ132	Carbon	1.3K ohms 1/16W
R257	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R258	ERJ3GEYJ302	Carbon	3K ohms 1/16W
R259	ERJ3GEY0R00	Carbon	0 ohms 1/16W
C3	YW5X103K5VB	Ceramic	0.01 µF
C6	YW5X102K5VB	Ceramic	1000 pF
C7,8	YW5F104Z2VB	Ceramic	0.1 µF
C9	YW5F473Z2VB	Ceramic	0.047 µF
C10	YWE212F105ZT	Ceramic	1 µF
C11	YW5X222K5VB	Ceramic	2200 pF
C15	YW5CH101J5VB	Ceramic	100 pF
C16	YW5CH201J5VB	Ceramic	200 pF
C17	YW5X103K5VB	Ceramic	0.01 µF
C18	YW5F104Z2VB	Ceramic	0.1 µF
C19	YW5CH201J5VB	Ceramic	200 pF
C20	YW5F104Z2VB	Ceramic	0.1 µF
C21	YW5F104Z2VB	Ceramic	0.1 µF
C22	YW5F104Z2VB	Ceramic	0.1 µF
C23	YW5X103K5VB	Ceramic	0.01 µF
C25	TAJA105M016	Electrolytic	1 µF 16V
C27	YW5CH180J5VB	Ceramic	18 pF
C28	YW5F104Z2VB	Ceramic	0.1 µF
C29	YF400104FZT	Ceramic	0.1 µF
C37	YW5CH331J5VB	Ceramic	330 pF
C38-40	YW5F104Z2VB	Ceramic	0.1 µF
C41	TAJA105M016	Electrolytic	1 µF 16V
C42	YW5X103K5VB	Ceramic	0.01 µF
C43	YW5F104Z2VB	Ceramic	0.1 µF
C44,45	YF400104FZT	Ceramic	0.1 µF
C49	ECEV1CV220	Electrolytic	22 µF 16V
C50	YWE212F105ZT	Ceramic	1 µF
C51	ECST1AY225ZR	Tantalum	2.2 µF 10V
C61	ECEV1EV4R7	Electrolytic	4.7 µF 25V
C68	ECST0JY475	Tantalum	4.7 µF 6.3V
C69	ECGC0JB100R	Semiconductor	10 µF 6.3V
C70	ECGC1BA4R7R	Semiconductor	4.7 µF 10V
C71	ECST0JY685	Tantalum	6.8 µF 6.3V
C72	ECGC0JB100R	Semiconductor	10 µF 6.3V
C75	ECEV0JV101	Electrolytic	100 µF 6.3V
C76	ECEV1CV220	Electrolytic	22 µF 16V
C78	YF400332XKT	Ceramic	3300 pF
C80	ECST1AD476ZR	Tantalum	47 µ F 10V
C81,82	ECST1AX106Z	Tantalum	10 µF 10V
C84	YWE212F105ZT	Ceramic	1 µF
C85,87	ECST1AD476ZR	Tantalum	47 µ F 10V
C88	TAJA105M016	Electrolytic	1 µF 16V
C89,90	ECST1AX106ZR	Tantalum	1 µF 10V
C92	ECST1AX106ZR	Tantalum	1 µF 10V
C93	ECST0JY106ZR	Tantalum	1 µF 6.3V
C94,95	YW5F104Z2VB	Ceramic	0.1 µF
C97	YW5F104Z2VB	Ceramic	0.1 µF
C98,99	YW5X102K5VB	Ceramic	1000 pF
C101	YF400104FZT	Ceramic	0.1 µF

REF.NO.	PART NO.	DESCRIPTION	
C102	YF400104FZT	Ceramic	0.1 µF
C109	YW5F104Z2VB	Ceramic	0.1 µF
C110	YWE212F105ZT	Cerámic	1 µF
C111	ECGC1BA4R7R	Semiconductor	4.7 µ F 10V
C112	ECST1VY224Z	Tantalum	0.22 µF 35V
C113	ECST1VY104	Tantalum	0.1 µF 35V
C114-121	ECEV1CV100	Electrolytic	10 µF 16V
C124	ECEV1EV220	Electrolytic	22 µF 25V
C125	ECEV1CV220	Electrolytic	22 µF 16V
C126	YW5F104Z2VB	Ceramic	0.1 µF
C127	YWE212F105ZT	Ceramic	1 µF
C128	TAJA105M016	Electrolytic	1 µF 16V
C129	YWE212F105ZT	Ceramic	1 µF
C130	YW5F104Z2VB	Ceramic	0.1 µF
C131	ECST1AX106ZR	Tantalum	10 µF 10V
C132	YW5CH471J5VB	Ceramic	470 pF
C133	ECEV1CV100	Electrolytic	10 µF 16V
C134	YW5CH471J5VB	Ceramic	470 pF
C135	YWE212F105ZT	Ceramic	1 µF
L1	EIC4EJ011E	Coil	
L3,4	YWCDR74221MC	Coil	
L8	ELJSC330KB	Coil	36 µH
L9-11	ELJFC8R2MF	Coil	8.2 µH
L13	ELJFC8R2MF	Coil	8.2 µH
L14	ELJSC330KB	Coil	33 µH
L16	YWCDR74221MC	Coil	
L17	ELJFC8R2MF	Coil	8.2 µH
L19	ELJFC8R2MF	Coil	8.2 µH
L23	ELJFB101KB	Coil	100 µH
CF1	YW4FS7374	Filter	
CF2	YWNL4532S4R4	Filter	
CF4	ELB4B532	Filter	
CF5,6	YWH50ACB20T	Filter	
CF7	NFM41R00C101	Filter	
CF8	EIK4EW020T	Filter	
CN1	YW533071891	18-pin Connector	
CN2,3	YW31756316	6-pin Connector	
CN4,5	YW21775946	5-pin Connector	
CN6	YW533072091	20-pin Connector	
TP1	YWRCT2125TPV	Test- Pin	

DIGITAL BOARD

REF.NO.	PART NO.	DESCRIPTION	
PCB7 (RTL)	YWVKCCP41E2A	Printed Circuit Board Assy	
IC1	MN6576	IC	
IC2	MN13821	IC	
IC3	MN67321	IC	
IC4	YWBR9021BFE1	IC	
IC5	YWMB88346BEF	IC	
IC6,7	NJM2903M	IC	
IC8	YWTMP90C78F1	IC	
IC9	YWCF45107PGJ	IC	
IC11	YWUPC664GS	IC	
Q1-3	2SK106945	FET	
Q5	2SC4617	Transistor	
Q9,10	2SC4619	Transistor	
Q11	2SA1774	Transistor	
D1	MA729	Diode	
D2	YWDA121	Diode	
D3-8	YWHVU359TRF	Diode	
D9-11	YWDA221	Diode	
R3,4	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R10	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R11	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R13-17	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R18	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R20	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R22,23	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R27	ERJ3GEYJ511	Carbon	510 ohms 1/16W
R29	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R30	ERJ3GEYJ474	Carbon	470K ohms 1/16W
R31	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R33	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R34	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R35	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R36	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R38	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R39	ERJ3GEYJ823	Carbon	82K ohms 1/16W
R40	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R41,43	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R44	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R46	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R48	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R49	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R51	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R52	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R53	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R54	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R55	ERJ3GEYJ162	Carbon	1.6K ohms 1/16W
R56	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R57	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R58	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R60,61	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R62	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R63	ERJ3GEYJ273	Carbon	27K ohms 1/16W
R64	ERJ3GEYJ392	Carbon	3.9K ohms 1/16W
R65,67	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R68	ERJ3GEYJ273	Carbon	27K ohms 1/16W
R69	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R70	ERJ3GEYJ824	Carbon	820K ohms 1/16W
R71	ERJ3GEYJ273	Carbon	27K ohms 1/16W
R72	ERJ3GEYJ162	Carbon	1.6K ohms 1/16W
R73	ERJ3GEYJ273	Carbon	27K ohms 1/16W
R75	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R78,79	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R80,81	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R82	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R83	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R84	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R85	ERJ3GEYJ512	Carbon	5.1K ohms 1/16W
R86	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R89,91	ERJ3GEYJ682	Carbon	6.8K ohms 1/16W
R95,96	ERJ3GEYJ162	Carbon	1.6K ohms 1/16W
R106	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R107	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R108,110	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R111	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R112	ERJ3GEYJ561	Carbon	560 ohms 1/16W
R113	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R114	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R115	ERJ3GEYJ361	Carbon	360 ohms 1/16W
R116	ERJ3GEYJ202	Carbon	2K ohms 1/16W
R117-119	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R120,121	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R122-129	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R130	ERJ3GEYJ471	Carbon	470 ohms 1/16W
R133	ERJ3GEYJ512	Carbon	5.1K ohms 1/16W
R134-136	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R137,378	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R140	ERJ3GEYJ433	Carbon	43K ohms 1/16W
R142	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R143	ERJ3GEYJ623	Carbon	62K ohms 1/16W
R144	ERJ3GEYJ124	Carbon	120K ohms 1/16W
R145	ERJ3GEYJ683	Carbon	68K ohms 1/16W
R146	ERJ3GEYJ103	Carbon	10K ohms 1/16W
C2	YW5F104Z2VB	Ceramic	0.1 µF
C3	YW5X102K5VB	Ceramic	1000 pF
C4	YW5F104Z2VB	Ceramic	0.1 µF
C6	YW5F104Z2VB	Ceramic	0.1 µF
C11-14	YW5F104Z2VB	Ceramic	0.1 µF
C15	YW5CH241J5VB	Ceramic	240 pF
C16	YW5F104Z2VB	Ceramic	0.1 µF
C17	YW5CH241J5VB	Ceramic	240 pF
C18,19	YW5CH680J5VB	Ceramic	68 pF
C20	YW5X103K5VB	Ceramic	0.01 µF
C21,22	YW5F104Z2VB	Ceramic	0.1 µF
C25,26	YW5CH101J5VB	Ceramic	91 pF
C27	YW5CH470J5VB	Ceramic	47 pF

REF.NO.	PART NO.	DESCRIPTION	
C29	YW5CH120J5VB	Ceramic	12 pF
C36,37	ECST1AX106ZR	Tantalum	10 µF 10V
C39-43	YWE212F105ZT	Ceramic	1 µF
C44	ECST1AX106ZR	Tantalum	10 µF 10V
C45	YWE212F105ZT	Ceramic	1 µF
C46	TAJA105M016	Electrolytic	1 µF 16V
C47	ECST1AY225ZR	Electrolytic	2.2 µF 10V
C48,49	ECST1AX106ZR	Tantalum	10 µF 10V
C51	ECST1AX335ZR	Tantalum	3.3 µF 10V
C52-54	ECST1AX106ZR	Tantalum	10 µF 10V
C61	ECST1AX106ZR	Tantalum	10 µF 10V
C62	YW5X102K5VB	Ceramic	1000 pF
C63	YW5CH470J5VB	Ceramic	47 pF
C64	YW5F104Z2VB	Ceramic	0.1µ F
C65	ECST1AX106ZR	Tantalum	10 µF 10V
C66,67	YW5F104Z2VB	Ceramic	0.1 µF
C68,69	YWE212F105ZB	Ceramic	1 µF
C70	YW5X103K5VB	Ceramic	0.01 µF
C71	YW5CH470J5VB	Ceramic	47 pF
Z3	MNR78W1LJ102	Block Resistor	
L1	EIC4EJ012E	Coil	
L2,6	ELJFC8R2MF	Coil	8.2 µH
L10,17	ELJFC8R2MF	Coil	8.2 µH
L18	ELJFB101KB	Coil	100 µH
X1	EF0V8004E0A	Crystal Oscillator	
X2	YWDX14R187	Crystal Oscillator	
X3	YWDX17R734	Crystal Oscillator	
CN1,2	YW51763136	26-pin Connector	
TP1,2	YWRCT2125TPV	Test- Pin	

ACCESSORY PARTS/PACKAGING PARTS

REF.NO.	PART NO.	DESCRIPTION
CN110	YFE4191J100	ALC Lens Connector
M51	YWV8QA3356AN	Operating Instructions
M52	YWT050803	Polyethylene Bag
M53	YWT20X35C03	Polyethylene Bag
M55	YWV9CA2354AN	Packaging Assy for WV-CP410/A
	YWV9CA2347AN	Packaging Assy for WV-CP410/B
	YWV9CA2353AN	Packaging Assy for WV-CP410/G
M56	YWV8FA0201A4	Packaging Label for WV-CP410/B
M57	YWV7SA1450A4	Label for WV-CP410/B,G

EXTENTION BOARD

REF.NO.	PART NO.	DESCRIPTION
EXB01	YWV0EA0326AN	Drive/Digital Extention Board

COLOR CCTV CAMERA WV-CP412

MISCELLANEOUS

REF.NO.	PART NO.	DESCRIPTION
FB101	YWCP210J1A	Flexible Board
CN101	YWP2270	BNC Connector
M1	YWBC-2B	Body Cap
M2	YWV1EB0127A4	Special Screw for FB Lock
M3	YWV3FA0178A3	FB Control Ring
M4	YWV5BA0128A2	Front Escutcheon
M5	YWVAKA1270AN	Optical Head Assy
M6	YWV4JA0479A4	Spring Plate
M7	YWV2CA0386A4	Hold Plate
M8	YWV4JA0262A4	Spring Coil
M9	YWV2SA2640A3	Front Mounting Angle
M10	YWV1EA0128A4	Special Screw
M11	YWV5WC1584A4	Front Side Panel
M12	YWV5EA1363A2	Upper Cover
M13	YWV2HA1168A3	Shield Mounting Angle
M16	YWV2KA0874A2	Bottom Cover
M17	YWV2TB0333A3	Mounting Bracket
M18	YWV1KA0128A4	Washer
M19	YWV5BA0121A3	Rear Escutcheon
M20	YWV2SA2642A3	Mounting Angle
M21	YWV5WA1626A4	Rear Panel
M31	YFV2NA0084A4	Spacer
M32	YWV2PA0615A4	Insulator Sheet
M33	YWV7SA1979A4	Model Label
M36	YWV7QA3381A4	Main Label
M38	YWV5GA0162A4	Cap for Switch
M39	YWV5GA0156A4	Cap for VR

ALC BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB2 (RTL)	YWVKYCP41E5A	Printed Circuit Board Assy
L1-4	YWNL251R0J	Coil 1 µH
CN1	AXN420330P	20-pin Connector
CN2	YFD4151N200	ALC 4-pin Connector
CN3	YW525881890	18-pin Connector

REAR SUB BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB3 (RTL)	YWVKBCP42P4A	Printed Circuit Board Assy
CN1	YW525882090	20-pin Connector

REAR BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB4 (RTL)	YWVKCCP42P4A	Printed Circuit Board Assy
D1	LN28RPPN	LED
R1	ERJ3GEYJ751	Carbon 750 ohms 1/16W
R2,3	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R4,5	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R6	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R7-9	ERJ3GEYJ103	Carbon 10K ohms 1/16W
VR3,4	YWST4TB203	Variable Resistor 20K ohms
C1	YW5F104Z2VB	Ceramic 0.1 µF
C2	YF400222XKT	Ceramic 2200 pF
SW1	YWKSD06S	Slide Switch
CN2	YW533910890	8-pin Connector
E1	YWT6746	2-pin Terminal Board
M24	YWLH53	LED Spacer

POWER BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB5 (RTL)	YWVKYCP42E3A	Printed Circuit Board Assy
IC1	AN7809R	IC
Q1	2SC1568-RST	Transistor
Q2	XN4601	Transistor
Q3	2SB766-RS	Transistor
Q4	2SD1819-QRS	Transistor
Q5	2SD1819-QRS	Transistor
Q8,9	XN4501	Transistor
D1-3	MA736	Diode
D6	MA3062	Diode
D8	MA3039	Diode
R5	ERG2SJ241	Metal 240 ohms 2W
R6	ERJ1WYJ2R2	Carbon 2.2 ohms 1W
R7	ERG2SJ470	Metal 47 ohms 2W
R8	ERJ14YJ4R7	Carbon 4.7 ohms 1/4W
R13	ERJ3GEYJ562	Carbon 5.6K ohms 1/16W
R14	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R20	ERJ3GEYJ682	Carbon 6.8K ohms 1/16W
R22	ERJ3GEYJ121	Carbon 120 ohms 1/16W
R28	ERJ3GEYJ101	Carbon 100 ohms 1/16W
R29,30	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R32	ERJ3GEYJ392	Carbon 3.9K ohms 1/16W
R33	ERJ3GEYJ750	Carbon 75 ohms 1/16W
R34	ERJ3GEYJ333	Carbon 33K ohms 1/16W
R35	ERJ3GEYJ362	Carbon 3.6K ohms 1/16W
R36	ERJ3GEYJ332	Carbon 3.3K ohms 1/16W
R37	ERJ3GEYJ333	Carbon 33K ohms 1/16W
R38	ERJ3GEYJ622	Carbon 6.2K ohms 1/16W
R41	ERJ3RHD112S	Metal 1.1K ohms
R43	ERJ3RHD242S	Metal 2.4K ohms 1/16W
R44	ERJ3RHD332S	Metal 3.3K ohms 1/16W
R45	ERJ3RHD104S	Metal 100K ohms 1/16W
C1	YW5F104Z2VB	Ceramic 0.1 µF
C2,3	YW5X122K5VB	Ceramic 1200 pF
C6	ECA1CFQ560	Electrolytic 56 µF 16V
C8	ECA0JFQ221	Electrolytic 220 µF 6.3V
C9	ECA1CFQ560	Electrolytic 56 µF 16V
C10	ECA1CFG471	Electrolytic 470 µF 16V
C11	ECA0JFQ101	Electrolytic 100 µF 6.3V
C13	ECA1CFG471	Electrolytic 470 µF 16V
C14	ECA1AFQ101	Electrolytic 100 µF 10V
CN1	YW526630810	8-pin Connector
F1 <!>	YWSSFR800F003	Current Fuse
E1	NO74A	Insulator
M25	YWV1KA0181A4	Washer
M26	YWV2CA0390A4	Hold Plate
M27	YWV2NA0382A4	Heat Sink

DRIVE BOARD

REF.NO.	PART NO.	DESCRIPTION	
PCB6 (RTL)	YWVKBCP42E2A	Printed Circuit Board Assy	
IC1	AN2018S	IC	
IC2	YWTC74VC04FS	IC	
IC3	YWC5023068E1	IC	
IC4	YWCXD2404R	IC	
IC6	AN2034FAP	IC	
IC7	YWMB3775PFV	IC	
IC8	YWC5020074E1	IC	
IC10	MN3112SA	IC	
IC13	YWTC74VC04FS	IC	
Q1	2SK106945	FET	
Q2,3	2SB766A-QR	Transistor	
Q9,15	2SC4617	Transistor	
Q17,18	2SB1218A-QR	Transistor	
Q19	2SA1774	Transistor	
Q21,22	2SC4617	Transistor	
Q23	UMZ1	Transistor	
Q24	2SA1774	Transistor	
Q26,27	2SC4617	Transistor	
Q28	2SA1774	Transistor	
Q29	2SD1819-QRS	Transistor	
Q30	2SC4617	Transistor	
Q33,34	2SC4619	Transistor	
Q35	2SC4617	Transistor	
Q36,37	2SC4619	Transistor	
D1,2	YWSC80206L	Diode	
D3	YWDA121	Diode	
D10,11	YWHVU359TRF	Diode	
D14,15	YWDA121	Diode	
D16-19	MA726	Diode	
D20	MA8100	Diode	
D22	YWDA121	Diode	
D23	MA112	Diode	
TH72,252	L311F202J402	Thermistor	
R14	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R20	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R21	ERJ3GEYJ202	Carbon	2K ohms 1/16W
R26	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R28	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R29	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R31	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R32	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R33	ERJ3GEYJ154	Carbon	150K ohms 1/16W
R34,35	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R36,37	ERJ3GEYJ560	Carbon	56 ohms 1/16W
R38	ERJ3GEYJ241	Carbon	240 ohms 1/16W
R41,44	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R46	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R47	ERJ3GEYJ330	Carbon	33 ohms 1/16W
R52	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R54	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R55	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R56,58	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R59,60	ERJ3GEYJ562	Carbon	5.6K ohms 1/16W
R63	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R64	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R66	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R68	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R69	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R73	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R75,80	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R81	ERJ3GEYJ151	Carbon	150 ohms 1/16W
R90	ERJ3GEYJ182	Carbon	1.8K ohms 1/16W
R93	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W
R97	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R99	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R100,103	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R107,110	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R121,123	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R129,131	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R132	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R134	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R135	ERJ3GEYJ561	Carbon	560 ohms 1/16W
R136	ERJ3GEYJ682	Carbon	6.8K ohms 1/16W
R137	ERJ6GEYJ102	Carbon	1K ohms 1/10W
R138	ERJ3GEYJ243	Carbon	24K ohms 1/16W
R139	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R140	ERJ6GEYJ821	Carbon	820 ohms
R141	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R142	ERJ3GEYJ471	Carbon	470 ohms 1/16W
R144,145	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R146	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R147,150	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R153	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R157-159	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R160	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R161	ERJ3GEYJ302	Carbon	3K ohms 1/16W
R162	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R163	ERJ3GEYJ751	Carbon	750 ohms 1/16W
R167	ERJ14YJ750	Carbon	75 ohms 1/4W
R168	ERJ3RHD622S	Metal	6.2K ohms 1/16W
R169	ERJ3RHD183S	Metal	18K ohms 1/16W
R170	ERJ3RHD562S	Metal	5.6K ohms 1/16W
R171	ERJ3RHD332S	Metal	3.3K ohms 1/16W
R175,176	ERJ3RHD102S	Metal	1K ohms 1/16W
R177	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R182	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R183	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R184	ERJ6GEYJ102	Carbon	1K ohms 1/10W
R185	ERJ6GEYJ821	Carbon	820 ohms 1/10W
R186-188	ERJ3GEYJ100	Carbon	10 ohms 1/16W
R189-191	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R192	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R193	ERJ3GEYJ183	Carbon	18K ohms 1/16W
R196	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R197	ERJ3GEYJ162	Carbon	1.6K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION
R198	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R201	ERJ3GEY0R00	Carbon 0 ohms 1/16W
R202	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R203	ERJ3GEYJ221	Carbon 220 ohms 1/16W
R204	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R205	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R206	ERJ3GEYJ104	Carbon 100K ohms 1/16W
R207	ERJ3GEY0R00	Carbon 0 ohms 1/16W
R209	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R210	ERJ3GEYJ473	Carbon 47K ohms 1/16W
R211	ERJ3GEYJ104	Carbon 100K ohms 1/16W
R212	ERJ3GEYJ221	Carbon 220 ohms 1/16W
R213-216	ERJ3GEYJ220	Carbon 22 ohms 1/16W
R217	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R218	ERJ3GEYJ363	Carbon 36K ohms 1/16W
R219	ERJ3GEYJ104	Carbon 100K ohms 1/16W
R220	ERJ3GEYJ101	Carbon 100 ohms 1/16W
R221,222	ERJ3GEYJ222	Carbon 2.2K ohms 1/16W
R223	ERJ3GEYJ101	Carbon 100 ohms 1/16W
R224,226	ERJ3GEY0R00	Carbon 0 ohms 1/16W
R227	ERJ3GEY0R00	Carbon 0 ohms 1/16W
R238	ERJ3GEYJ561	Carbon 560 ohms 1/16W
R240	ERJ3GEYJ331	Carbon 330 ohms 1/16W
R241	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R242	ERJ3GEYJ512	Carbon 5.1K ohms 1/16W
R243	ERJ3GEYJ821	Carbon 820 ohms 1/16W
R244	ERJ3GEYJ182	Carbon 1.8K ohms 1/16W
R245	ERJ3GEYJ821	Carbon 820 ohms 1/16W
R246	ERJ3GEYJ302	Carbon 3K ohms 1/16W
R247	ERJ3GEYJ472	Carbon 4.7K ohms 1/16W
R248,249	ERJ3GEYJ222	Carbon 2.2K ohms 1/16W
R251	ERJ3GEYJ362	Carbon 3.6K ohms 1/16W
R252	ERJ3GEYJ202	Carbon 2K ohms 1/16W
R255,256	ERJ3GEYJ132	Carbon 1.3K ohms 1/16W
R257	ERJ3GEYJ222	Carbon 2.2K ohms 1/16W
R258	ERJ3GEYJ302	Carbon 3K ohms 1/16W
R259	ERJ3GEY0R00	Carbon 0 ohms 1/16W
C3	YW5X103K5VB	Ceramic 0.01 µF
C6	YW5X102K5VB	Ceramic 1000 pF
C7,8	YW5F104Z2VB	Ceramic 0.1 µF
C9	YW5F473Z2VB	Ceramic 0.047 µF
C10	YWE212F105ZT	Ceramic 1 µF
C11	YW5X222K5VB	Ceramic 2200 pF
C15	YW5CH101J5VB	Ceramic 100 pF
C16	YW5CH201J5VB	Ceramic 200 pF
C17	YW5X103K5VB	Ceramic 0.01 µF
C18	YW5F104Z2VB	Ceramic 0.1 µF
C19	YW5CH201J5VB	Ceramic 200 pF
C20-22	YW5F104Z2VB	Ceramic 0.1 µF
C23	YW5X103K5VB	Ceramic 0.01 µF
C25	TAJA105M016	Electrolytic 1 µF 16V
C27	YW5CH180J5VB	Ceramic 18 pF
C28	YW5F104Z2VB	Ceramic 0.1 µF
C29	YF400104FZT	Ceramic 0.1 µF
C37	YW5CH331J5VB	Ceramic 330 pF

REF.NO.	PART NO.	DESCRIPTION
C38-40	YW5F104Z2VB	Ceramic 0.1 µF
C41	TAJA105M016	Electrolytic 1 µF 16V
C42	YW5X103K5VB	Ceramic 0.01 µF
C43	YW5F104Z2VB	Ceramic 0.1 µF
C44,45	YF400104FZT	Ceramic 0.1 µF
C49	ECEV1CV220	Electrolytic 22 µF 16V
C50	YWE212F105ZT	Ceramic 1 µF
C51	ECST1AY225ZR	Electrolytic 2.2 µF 10V
C61	ECEV1EV4R7SR	Electrolytic 4.7 µF 25V
C68	ECST0JY475	Electrolytic 4.7 µF 6.3V
C69	ECGC0JB100R	Semiconductor 10 µF 6.3V
C70	ECGC1BA4R7R	Semiconductor 4.7 µF 25V
C71	ECST0JY685	Electrolytic 6.8 µF 6.3V
C72	ECGC0JB100R	Semiconductor 10 µF 6.3V
C75	ECEV0JV101	Electrolytic 100 µF 6.3V
C76	ECEV1CV220	Electrolytic 22 µF 16V
C78	YF400332XKT	Ceramic 3300 pF
C80	ECST1AD476ZR	Electrolytic 47 µF 10V
C81,82	ECST1AX106ZR	Electrolytic 10 µF 10V
C84	YWE212F105ZT	Ceramic 1 µF
C85,87	ECST1AD476ZR	Electrolytic 47 µF 10V
C88	TAJA105M016	Electrolytic 1 µF 16V
C89,90	ECST1AX106ZR	Electrolytic 10 µF 10V
C92	ECST1AX106ZR	Electrolytic 10 µF 10V
C93	ECST0JY106ZR	Electrolytic 10 µF 6.3V
C94,95	YW5F104Z2VB	Ceramic 0.1 µF
C97	YW5F104Z2VB	Ceramic 0.1 µF
C98,99	YW5X102K5VB	Ceramic 1000 pF
C101,102	YF400104FZT	Ceramic 0.1 µF
C109	YW5F104Z2VB	Ceramic 0.1 µF
C110	YWE212F105ZT	Ceramic 1 µF
C111	ECGC1BA4R7R	Semiconductor 4.7 µF 12.5V
C112	ECST1VY224Z	Electrolytic 0.22 µF 35V
C113	ECST1VY104	Electrolytic 0.1 µF 35V
C114-117	ECEV1CV100	Electrolytic 10 µF 16V
C119-121	ECEV1CV100	Electrolytic 10 µF 16V
C124	ECEV1EV220	Electrolytic 22 µF 25V
C125	ECEV1CV220	Electrolytic 22 µF 16V
C126	YW5F104Z2VB	Ceramic 0.1 µF
C127	YWE212F105ZT	Ceramic 1 µF
C128	TAJA105M016	Electrolytic 10 µF 16V
C129	YWE212F105ZT	Ceramic 1 µF
C130	YW5F104Z2VB	Ceramic 0.1 µF
C131	ECST1AX106ZR	Tantalum 10 µF 10V
C132	YW5CH471J5VB	Ceramic 470 pF
C133	ECEV1CV100	Electrolytic 10 µF 16V
C134	YW5CH471J5VB	Ceramic 470 pF
C135	YWE212F105ZT	Ceramic 1 µF
L1	EIC4EJ011E	Coil
L3,4	YWCDR74221MC	Coil 220 µH
L8	ELJSC330KB	Coil 33 µH
L9-11	ELJFC8R2MF	Coil 8.2 µH
L13	ELJFC8R2MF	Coil 8.2 µH
L14	ELJSC330KB	Coil 33 µH

REF.NO.	PART NO.	DESCRIPTION	
L16	YWCDR74221MC	Coil	220 µH
L17,19	ELJFC8R2MF	Coil	8.2 µH
L23	ELJFB101KB	Coil	100 µH
CF1	YW4FS7374	Filter	
CF2	YWNL4532S4R4	Filter	
CF4	ELB4B532	Filter	
CF5,6	YWH50ACB20T	Filter	
CF7	NFM41R00C101	Filter	
CF8	EIK4EW020T	Filter	
CN1	YW533071891	18-pin Connector	
CN2,3	YW31756316	6-pin Connecto	
CN4,5	YW21775946	26-pin Connector	
CN6	YW533072091	20-pin Connecto	
TP1	YWRCT2125TPV	Test -Pin	

DIGITAL BOARD

REF.NO.	PART NO.	DESCRIPTION	
PCB7 (RTL)	YWVKCCP42E2A	Printed Circuit Board Assy	
IC1	MN6576	IC	
IC2	MN13821	IC	
IC3	MN67321	IC	
IC4	YWBR9021BFE1	IC	
IC5	YWMB88346BEF	IC	
IC6,7	NJM2903M	IC	
IC8	YWTMP90C78F1	IC	
IC9	YWCF45107PGJ	IC	
IC11	YWUPC664GS	IC	
Q1,3	2SK106945	FET	
Q5	2SC4617	Transistor	
Q9,10	2SC4619	Transistor	
Q11	2SA1774	Transistor	
D1	MA729	Diode	
D2	YWDA121	Diode	
D5-8	YWHVU359TRF	Diode	
D9-11	YWDA221	Diode	
R3,4	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R10	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R11	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R13-17	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R18	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R20	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R22,23	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R27	ERJ3GEYJ511	Carbon	510 ohms 1/16W
R29	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R30	ERJ3GEYJ474	Carbon	470K ohms 1/16W
R31	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R35	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R38,41	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R46	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R48,51	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R52	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R53	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R54	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R55	ERJ3GEYJ162	Carbon	1.6K ohms 1/16W
R56	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R57	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R58	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R60,61	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R62	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R63	ERJ3GEYJ273	Carbon	27K ohms 1/16W
R64	ERJ3GEYJ392	Carbon	3.9K ohms 1/16W
	ERJ3GEYJ752	Carbon	7.5K ohms 1/16W
R65,67	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R68	ERJ3GEYJ273	Carbon	27K ohms 1/16W
R69	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R70	ERJ3GEYJ824	Carbon	820K ohms 1/16W
R71	ERJ3GEYJ273	Carbon	27K ohms 1/16W
R72	ERJ3GEYJ162	Carbon	1.6K ohms 1/16W
R73	ERJ3GEYJ273	Carbon	27K ohms 1/16W
R75	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R78,79	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R80,81	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R82	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R83	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R84	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R85	ERJ3GEYJ512	Carbon	5.1K ohms 1/16W
R86	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R89,91	ERJ3GEYJ682	Carbon	6.8K ohms 1/16W
R95,96	ERJ3GEYJ162	Carbon	1.6K ohms 1/16W
R106	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R107	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R108	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R109	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R111	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R112	ERJ3GEYJ561	Carbon	560 ohms 1/16W
R113	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R114	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R115	ERJ3GEYJ361	Carbon	360 ohms 1/16W
R116	ERJ3GEYJ202	Carbon	2K ohms 1/16W
R117-119	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R120,121	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R122-129	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R130	ERJ3GEYJ471	Carbon	470 ohms 1/16W
R133	ERJ3GEYJ512	Carbon	5.1K ohms 1/16W
R134-136	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R137,138	ERJ6GEY0R00	Carbon	1 ohms 1/10W
R140	ERJ3GEYJ433	Carbon	43K ohms 1/16W
R142	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R143	ERJ3GEYJ623	Carbon	62K ohms 1/16W
R144	ERJ3GEYJ124	Carbon	120K ohms 1/16W
R145	ERJ3GEYJ683	Carbon	68K ohms 1/16W
R146	ERJ3GEYJ103	Carbon	10K ohms 1/16W
C2	YW5F104Z2VB	Ceramic	0.1 µF
C3	YW5X102K5VB	Ceramic	1000 pF
C4,6	YW5F104Z2VB	Ceramic	0.1 µF
C11-13	YW5F104Z2VB	Ceramic	0.1 µF
C16	YW5F104Z2VB	Ceramic	0.1 µF

REF.NO.	PART NO.	DESCRIPTION
C18,19	YW5CH680J5VB	Ceramic 68 pF
C20	YW5X103K5VB	Ceramic 0.01 µF
C21,22	YW5F104Z2VB	Ceramic 0.1 µF
C25,26	YW5CH101J5VB	Ceramic 100 pF
C27	YW5CH470J5VB	Ceramic 47 pF
C29	YW5CH120J5VB	Ceramic 12 pF
C36,37	ECST1AX106ZR	Tantalum 10 µF 10V
C39-43	YWE212F105ZT	Ceramic 1 µF
C44	ECST1AX106ZR	Tantalum 10 µF 10V
C45	YWE212F105ZT	Ceramic 1 µF
C46	TAJA105M016	Electrolytic 1 µF 16V
C48,49	ECST1AX106ZR	Tantalum 10 µF 10V
C50	ECST1AY225ZR	Tantalum 2.2 F 10V
C51	ECST1AY335ZR	Tantalum 3.3 F 10V
C52-54	ECST1AX106ZR	Tantalum 10 µF 10V
C61	ECST1AX106ZR	Tantalum 10 µF 10V
C62	YW5X102K5VB	Ceramic 1000 pF
C63	YW5CH470J5VB	Ceramic 47 pF
C64	YW5F104Z2VB	Ceramic 0.1 µF
C65	ECST1AX106ZR	Tantalum 10 µF 10V
C66,67	YW5F104Z2VB	Ceramic 0.1 µF
C68,69	YWE212F105ZT	Ceramic 1 µF
C70	YW5X103K5VB	Ceramic 0.01 µF
C71	YW5CH470J5VB	Ceramic 47 pF
Z3	MNR78W1LJ102	Block Resistor
L2,6	ELJFC8R2MF	Coil 8.2 µH
L10,17	ELJFC8R2MF	Coil 8.2 µH
L18	ELJFB101KB	Coil 100 µH
X1	EF0V8004E0A	Crystal Oscillator
X2	YWDX14R187	Crystal Oscillator
X3	YWDX17R734	Crystal Oscillator
CN1,2	YW51763136	26-pin Connector
TP1,2	YWRCT2125TPV	Test- Pin

ACCESSORY PARTS/PACKAGING PARTS

REF.NO.	PART NO.	DESCRIPTION
CN110	YFE4191J100	ALC Connector
M51	YWV8QA3356AN	Operating Instructions
M52	YWT050803	Polyethylene Bag
M53	YWT20X35C03	Polyethylene Bag
M55	YWV9CA2355AN	Packaging Assy
M57	YWV7SA1450A4	Label

EXTENTION BOARD

REF.NO.	PART NO.	DESCRIPTION
EXB01	YWV0EA0326AN	Drive/Digital Extention Board

COLOR CCTV CAMERA WV-CP414

MISCELLANEOUS

REF.NO.	PART NO.	DESCRIPTION
FB101	YWCP210J1A	Flexible Board
CN101	YWP2270	BNC Connector
E102	YW840522	Insulator Fuse Cover
M1	YWBC-2B	Body Cap
M2	YWV1EB0127A4	Special Screw for FB Lock
M3	YWV3FA0178A3	FB Control Ring
M4	YWV5BA0128A2	Front Escutcheon
M5	YWVAKA1270AN	Head Optical Assy
M6	YWV4JA0479A4	Spring Plate
M7	YWV2CA0386A4	Hold Plate
M8	YWV4JA0262A4	Spring Coil
M9	YWV2SA2640A3	Front Mounting Angle
M10	YWV1EA0128A4	Special Screw
M11	YWV5WC1584A4	Front Side Panel
M12	YWV5EA1363A2	Upper Cover
M13	YWV2HA1168A3	Shield Mounting Angle
M16	YWV2KA0874A2	Bottom Cover
M17	YWV2TB0333A3	Mounting Bracket
M18	YWV1KA0128A4	Washer
M19	YWV5BA0121A3	Rear Escutcheon
M20	YWV2SA2642A3	Mounting Angle
M21	YWV5WA1625A4	Rear Panel
M31	YFV2NA0084A4	Spacer
M32	YWV2PA0615A4	Insulator Sheet
M33	YWV7SA1978A4	Label
M35	YWV7MA0412A4	Safety Label
M36	YWV7QA3380A4	Main Labe
M38	YWV5GA0162A4	Cap for Switch
M39	YWV5GA0156A4	Cap for VR

ALC BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB2 (RTL)	YWVKYCP41E5A	Printed Circuit Board Assy
L1-4	YWNL251R0J	Coil 1 µH
CN1	AXN420330P	20-pin Connector
CN2	YFD4151N200	ALC 4-pin Connector
CN3	YW525881890	18-pin Connector

REAR SUB BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB3 (RTL)	YWVKBCP44P4A	Printed Circuit Board Assy
CN1	YW525882090	20-pin Connector

REAR BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB4 (RTL)	YWVKCCP44P4A	Printed Circuit Board Assy
D1	LN28RPPN	LED
R1	ERJ3GEYJ751	Carbon 750 ohms1/16W
R2-5	ERJ3GEYJ102	Carbon 1K ohms1/16W
R6	ERJ3GEYJ103	Carbon 10K ohms1/16W
R7	ERJ3GEYJ102	Carbon 1K ohms1/16W
R8-11	ERJ3GEYJ103	Carbon 10K ohms1/16W
VR2-4	YWST4TB203	Variable Resistor 20K ohms
C1	YW5F104Z2VB	Ceramic 0.1 µF
C2,3	YF400222XKT	Ceramic 2200 pF
SW1	YWKSD07S	Slide Switch
CN2	YW533910890	8-pin Connector
E1	YWT6746	2-pin Terminal Board
M24	YWLH53	LED Spacer

POWER BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB5 (RTL)	YWVKYBP14P3A	Printed Circuit Board Assy
IC1	YWFA5304S	IC
IC2	YWTA76431S	IC
Q1	2SK2182	FET
Q2,3	PS25011KL	Transistor
D1	YWD2SBA20	Diode
D2	YWDAN217	Diode
D3	YWSC2012	Diode
D4	YWDTZ5.1	Diode
D8	YWSC80209R	Diode
VS1	ERZC07DK471U	ZNR
R1	ERJ14YJ223	Carbon 22K ohms 1/4W
R2	YF2116220JT	Carbon 22 ohms 1/10W
R3	YF2116184JT	Carbon 180K ohms 1/10W
R4	YF2116220JT	Carbon 22 ohms 1/10W
R5	ERJ6GEYJ153	Carbon 15K ohms 1/10W
R6	ERJ6GEYJ202	Carbon 2K ohms 1/10W
R7	ERJ6GEYJ221	Carbon 220 ohms 1/10W
R8	ERJ14YJR51	Carbon 0.5 ohms 1/4W
R9,10	ERJ14YJ112	Carbon 1.1K ohms 1/4W
R11	YF2116152JT	Carbon 1.5K ohms 1/10W
R12	ERJ6GEYJ470	Carbon 47 ohms 1/10W
R13	ERJ6GEYJ102	Carbon 1K ohms 1/10W
R14	YWR1220P161D	Metal 160 ohms
R15	YWR1220P163D	Metal 16K ohms
R16	YF2116681JT	Carbon 680 ohms 1/10W
R17	YWR1220P622D	Metal 6.2K ohms
R18	ERJ6GEYJ103	Carbon 10K ohms 1/10W
R19	R1220P121D	Metal 120 ohms
R30	ERJ6GEY0R00	Carbon 1 ohms 1/10W
C1	ECQV1H474JZ	Plastic 0.47 µF 50V
C2,3	ECQM1103KZ	Plastic 0.01 µF
C5	ECEA1HGE331	Electrolytic 330 µF 50V
C6	ECA1VFQ270	Electrolytic 27 µF 35V
C7	YW400105FZ	Ceramic 1 µF
C8	YF400681CHJT	Ceramic 680 pF 50V
C9	YF400104FZT	Ceramic 0.1 µF
C10	ECEA1HGE3R3	Electrolytic 3.3 µF 50V
C11	YF400104FZT	Ceramic 0.1 µF
C12	YF400103XKT	Ceramic 0.01 µF
C13	YW400105FZ	Ceramic 1 µF
C14,15	ECA1CFQ271	Electrolytic 270 µF 16V
C16	ECA1CFQ121	Electrolytic 120 µF 16V
C17	YF400104FZT	Ceramic 0.1 µF
C18	ECQM1103KZ	Plastic 0.01 µF
C20	ECQV1H104JZ	Plastic 0.1 µF 50V
L1	YWSU10H07040	Coil
L2	YWPC7330K	Coil 33 µH
T1 <!>	ETS22BC125AC	Power Transformer
CN1	YW526630810	8-pin Connector
F1 <!>	XBA1C20NU100	Current Fuse 2A 125V
E1,2	S-N5057	Fuse Holder
M25	YWV1KA0181A4	Washer

REF.NO.	PART NO.	DESCRIPTION	
DRIVE BOARD			
PCB6 (RTL)	YWVKBCP41E2A	Printed Circuit Board Assy	
IC1	AN2018S	IC	
IC2	YWTC74VC04F	IC	
IC3	YWC5023068E1	IC	
IC4	YWCXD2404R	IC	
IC6	AN2034FAP	IC	
IC7	YWMB3775PFV	IC	
IC8	YWC5020074E1	IC	
IC10	MN3112SA	IC	
IC13	YWTC74VC04FS	IC	
Q1	2SK106945	FET	
Q2,3	2SB766A-QR	Transistor	
Q9,15	2SC4617	Transistor	
Q17,18	2SB1218A-QR	Transistor	
Q19	2SA1774	Transistor	
Q22	2SC4617	Transistor	
Q23	UMZ1	Transistor	
Q24	2SA1774	Transistor	
Q26,27	2SC4617	Transistor	
Q28	2SA1774	Transistor	
Q29	2SD1819-QRS	Transistor	
Q30	2SC4617	Transistor	
Q33,34	2SC4619	Transistor	
Q35	2SC4617	Transistor	
Q36,37	2SC4619	Transistor	
D1,2	YWSC80206L	Diode	
D3	YWDA121	Diode	
D10,11	YWHVU359TRF	Diode	
D14,15	YWDA121	Diode	
D16-19	MA726	Diode	
D20	MA8100	Diode	
D22	YWDA121	Diode	
D23	MA112	Diode	
TH72	L311F202J402	Thermistor	
TH252	L311F202J402	Thermistor	
R14	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R20	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R21	ERJ3GEYJ202	Carbon	2K ohms 1/16W
R26	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R28	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R29	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R31	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R32	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R33	ERJ3GEYJ154	Carbon	150K ohms 1/16W
R34,35	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R36,37	ERJ3GEYJ560	Carbon	56 ohms 1/16W
R38	ERJ3GEYJ241	Carbon	240 ohms 1/16W
R41	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R44	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R46	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R47	ERJ3GEYJ330	Carbon	33 ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R52	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R54	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R55	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R56	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R58	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R59,60	ERJ3GEYJ562	Carbon	5.6K ohms 1/16W
R63	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R64	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R66	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R68	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R69	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R73	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R75	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R80	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R81	ERJ3GEYJ151	Carbon	150 ohms 1/16W
R90	ERJ3GEYJ182	Carbon	1.8K ohms 1/16W
R93	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W
R97	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R99	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R100	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R103	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R107,110	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R121,123	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R129,131	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R132	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R134	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R135	ERJ3GEYJ561	Carbon	560 ohms 1/16W
R136	ERJ3GEYJ682	Carbon	6.8K ohms 1/16W
R137	ERJ6GEYJ102	Carbon	1K ohms 1/10W
R138	ERJ3GEYJ243	Carbon	24K ohms 1/16W
R139	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R140	ERJ6GEYJ821	Carbon	820 ohms 1/16W
R141	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R142	ERJ3GEYJ471	Carbon	470 ohms 1/16W
R144,145	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R146	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R147,150	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R153	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R157-159	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R160	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R161	ERJ3GEYJ272	Carbon	2.7K ohms 1/16W
R162	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R163	ERJ3GEYJ751	Carbon	750 ohms 1/16W
R167	ERJ14YJ750	Carbon	75 ohms 1/4W
R168	ERJ3RHD622S	Metal	6.2K ohms 1/16W
R169	ERJ3RHD183S	Metal	18K ohms 1/16W
R170	ERJ3RHD562S	Metal	5.6K ohms 1/16W
R171	ERJ3RHD332S	Metal	3.3K ohms 1/16W
R175,176	ERJ3RHD102S	Metal	1K ohms 1/16W
R178	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R183	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R184	ERJ6GEYJ102	Carbon	1K ohms 1/10W
R185	ERJ6GEYJ821	Carbon	820 ohms 1/16W
R186-188	ERJ3GEYJ100	Carbon	10 ohms 1/16W
R189-191	ERJ3GEYJ102	Carbon	1K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R196	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R197	ERJ3GEYJ162	Carbon	1.6K ohms 1/16W
R198	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R201	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R202	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R203	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R204	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R205	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R206	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R207	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R209	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R210	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R211	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R212	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R213-216	ERJ3GEYJ220	Carbon	22 ohms 1/16W
R217	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R218	ERJ3GEYJ363	Carbon	36K ohms 1/16W
R219	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R220	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R221,222	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R223	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R224	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R226,227	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R238	ERJ3GEYJ561	Carbon	560 ohms 1/16W
R240	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R241	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R242	ERJ3GEYJ512	Carbon	5.1K ohms 1/16W
R243	ERJ3GEYJ821	Carbon	820 ohms 1/16W
R244	ERJ3GEYJ182	Carbon	1.8K ohms 1/16W
R245	ERJ3GEYJ821	Carbon	820 ohms 1/16W
R246	ERJ3GEYJ302	Carbon	3K ohms 1/16W
R247	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R248,249	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R251	ERJ3GEYJ362	Carbon	3.6K ohms 1/4W
R252	ERJ3GEYJ202	Carbon	2K ohms 1/16W
R255,256	ERJ3GEYJ132	Carbon	1.3K ohms 1/16W
R257	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R258	ERJ3GEYJ302	Carbon	3K ohms 1/16W
R259	ERJ3GEY0R00	Carbon	0 ohms 1/16W
C3	YW5X103K5VB	Ceramic	0.01 µF
C6	YW5X102K5VB	Ceramic	1000 pF
C7,8	YW5F104Z2VB	Ceramic	0.1 µF
C9	YW5F473Z2VB	Ceramic	0.047 µF
C10	YWE212F105ZT	Ceramic	1 µF
C11	YW5X222K5VB	Ceramic	2200 pF
C15	YW5CH101J5VB	Ceramic	100 pF
C16	YW5CH201J5VB	Ceramic	200 pF
C17	YW5X103K5VB	Ceramic	0.01 µF
C18	YW5F104Z2VB	Ceramic	0.1 µF
C19	YW5CH201J5VB	Ceramic	200 pF
C20	YW5F104Z2VB	Ceramic	0.1 µF
C21	YW5F104Z2VB	Ceramic	0.1 µF
C22	YW5F104Z2VB	Ceramic	0.1 µF
C23	YW5X103K5VB	Ceramic	0.01 µF

REF.NO.	PART NO.	DESCRIPTION	
C25	TAJA105M016	Electrolytic	1 µF 16V
C27	YW5CH180J5VB	Ceramic	18 pF
C28	YW5F104Z2VB	Ceramic	0.1 µF
C29	YF400104FZT	Ceramic	0.1 µF
C37	YW5CH331J5VB	Ceramic	330 pF
C38-40	YW5F104Z2VB	Ceramic	0.1 µF
C41	TAJA105M016	Electrolytic	1 µF 16V
C42	YW5X103K5VB	Ceramic	0.01 µF
C43	YW5F104Z2VB	Ceramic	0.1 µF
C44,45	YF400104FZT	Ceramic	0.1 µF
C49	ECEV1CV220	Electrolytic	22 µF 16V
C50	YWE212F105ZT	Ceramic	1 µF
C51	ECST1AY225ZR	Tantalum	2.2 µF 10V
C61	ECEV1EV4R7	Electrolytic	4.7 µF 25V
C68	ECST0JY475	Tantalum	4.7 µF 6.3V
C69	ECGC0JB100R	Semiconductor	10 µF 6.3V
C70	ECGC1BA4R7R	Semiconductor	4.7 µF 10V
C71	ECST0JY685	Tantalum	6.8 µF 6.3V
C72	ECGC0JB100R	Semiconductor	10 µF 6.3V
C75	ECEV0JV101	Electrolytic	100 µF 6.3V
C76	ECEV1CV220	Electrolytic	22 µF 16V
C78	YF400332XKT	Ceramic	3300 pF
C80	ECST1AD476ZR	Tantalum	47 µ F 10V
C81,82	ECST1AX106Z	Tantalum	10 µF 10V
C84	YWE212F105ZT	Ceramic	1 µF
C85,87	ECST1AD476ZR	Tantalum	47 µ F 10V
C88	TAJA105M016	Electrolytic	1 µF 16V
C89,90	ECST1AX106ZR	Tantalum	1 µF 10V
C92	ECST1AX106ZR	Tantalum	1 µF 10V
C93	ECST0JY106ZR	Tantalum	1 µF 6.3V
C94,95	YW5F104Z2VB	Ceramic	0.1 µF
C97	YW5F104Z2VB	Ceramic	0.1 µF
C98,99	YW5X102K5VB	Ceramic	1000 pF
C101	YF400104FZT	Ceramic	0.1 µF
C102	YF400104FZT	Ceramic	0.1 µF
C109	YW5F104Z2VB	Ceramic	0.1 µF
C110	YWE212F105ZT	Ceramic	1 µF
C111	ECGC1BA4R7R	Semiconductor	4.7 µ F 10V
C112	ECST1VY224Z	Tantalum	0.22 µF 35V
C113	ECST1VY104	Tantalum	0.1 µF 35V
C114-121	ECEV1CV100	Electrolytic	10 µF 16V
C124	ECEV1EV220	Electrolytic	22 µF 25V
C125	ECEV1CV220	Electrolytic	22 µF 16V
C126	YW5F104Z2VB	Ceramic	0.1 µF
C127	YWE212F105ZT	Ceramic	1 µF
C128	TAJA105M016	Electrolytic	1 µF 16V
C129	YWE212F105ZT	Ceramic	1 µF
C130	YW5F104Z2VB	Ceramic	0.1 µF
C131	ECST1AX106ZR	Tantalum	10 µF 10V
C132	YW5CH471J5VB	Ceramic	470 pF
C133	ECEV1CV100	Electrolytic	10 µF 16V
C134	YW5CH471J5VB	Ceramic	470 pF
C135	YWE212F105ZT	Ceramic	1 µF
L1	EIC4EJ011E	Coil	

REF.NO.	PART NO.	DESCRIPTION	
L3,4	YWCDR74221MC	Coil	
L8	ELJSC330KB	Coil	36 µH
L9-11	ELJFC8R2MF	Coil	8.2 µH
L13	ELJFC8R2MF	Coil	8.2 µH
L14	ELJSC330KB	Coil	33 µH
L16	YWCDR74221MC	Coil	
L17	ELJFC8R2MF	Coil	8.2 µH
L19	ELJFC8R2MF	Coil	8.2 µH
L23	ELJFB101KB	Coil	100 µH
CF1	YW4FS7374	Filter	
CF2	YWNL4532S4R4	Filter	
CF4	ELB4B532	Filter	
CF5,6	YWH50ACB20T	Filter	
CF7	NFM41R00C101	Filter	
CF8	EIK4EW020T	Filter	
CN1	YW533071891	18-pin Connector	
CN2,3	YW31756316	6-pin Connector	
CN4,5	YW21775946	26-pin Connector	
CN6	YW533072091	20-pin Connector	
TP1	YWRCT2125TPV	Test- Pin	

DIGITAL BOARD

REF.NO.	PART NO.	DESCRIPTION	
PCB7 (RTL)	YWVKCCP41E2A	Printed Circuit Board Assy	
IC1	MN6576	IC	
IC2	MN13821	IC	
IC3	MN67321	IC	
IC4	YWBR9021BFE1	IC	
IC5	YWMB88346BEF	IC	
IC6,7	NJM2903M	IC	
IC8	YWTMP90C78F1	IC	
IC9	YWCF45107PGJ	IC	
IC11	YWUPC664GS	IC	
Q1-3	2SK106945	FET	
Q5	2SC4617	Transistor	
Q9,10	2SC4619	Transistor	
Q5	2SA1774	Transistor	
D1	MA729	Diode	
D2	YWDA121	Diode	
D3-8	YWHVU359TRF	Diode	
D9-11	YWDA221	Diode	
R3,4	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R10	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R11	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R13-17	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R18	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R20	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R22,23	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R27	ERJ3GEYJ511	Carbon	510 ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R29	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R30	ERJ3GEYJ474	Carbon	470K ohms 1/16W
R31	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R33	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R34	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R35	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R36	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R38	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R39	ERJ3GEYJ823	Carbon	82K ohms 1/16W
R40	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R41,43	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R44	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R46	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R48	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R49	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R51	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R52	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R53	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R54	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R55	ERJ3GEYJ162	Carbon	1.6K ohms 1/16W
R56	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R57	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R58	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R60,61	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R62	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R63	ERJ3GEYJ273	Carbon	27K ohms 1/16W
R64	ERJ3GEYJ392	Carbon	3.9K ohms 1/16W
R65,67	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R68	ERJ3GEYJ273	Carbon	27K ohms 1/16W
R69	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R70	ERJ3GEYJ824	Carbon	820K ohms 1/16W
R71	ERJ3GEYJ273	Carbon	27K ohms 1/16W
R72	ERJ3GEYJ162	Carbon	1.6K ohms 1/16W
R73	ERJ3GEYJ273	Carbon	27K ohms 1/16W
R75	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R78,79	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R80,81	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R82	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R83	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R84	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R85	ERJ3GEYJ512	Carbon	5.1K ohms 1/16W
R86	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R89,91	ERJ3GEYJ682	Carbon	6.8K ohms 1/16W
R95,96	ERJ3GEYJ162	Carbon	1.6K ohms 1/16W
R106	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R107	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R108,110	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R111	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R112	ERJ3GEYJ561	Carbon	560 ohms 1/16W
R113	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R114	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R115	ERJ3GEYJ361	Carbon	360 ohms 1/16W
R116	ERJ3GEYJ202	Carbon	2K ohms 1/16W
R117-119	ERJ3GEYJ101	Carbon	100 ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R120,121	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R122-129	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R130	ERJ3GEYJ471	Carbon	470 ohms 1/16W
R133	ERJ3GEYJ512	Carbon	5.1K ohms 1/16W
R134-136	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R137,378	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R140	ERJ3GEYJ433	Carbon	43K ohms 1/16W
R142	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R143	ERJ3GEYJ623	Carbon	62K ohms 1/16W
R144	ERJ3GEYJ124	Carbon	120K ohms 1/16W
R145	ERJ3GEYJ683	Carbon	68K ohms 1/16W
R146	ERJ3GEYJ103	Carbon	10K ohms 1/16W
C2	YW5F104Z2VB	Ceramic	0.1 µF
C3	YW5X102K5VB	Ceramic	1000 pF
C4	YW5F104Z2VB	Ceramic	0.1 µF
C6	YW5F104Z2VB	Ceramic	0.1 µF
C11-14	YW5F104Z2VB	Ceramic	0.1 µF
C15	YW5CH241J5VB	Ceramic	240 pF
C16	YW5F104Z2VB	Ceramic	0.1 µF
C17	YW5CH241J5VB	Ceramic	240 pF
C18,19	YW5CH680J5VB	Ceramic	68 pF
C20	YW5X103K5VB	Ceramic	0.01 µF
C21,22	YW5F104Z2VB	Ceramic	0.1 µF
C25,26	YW5CH101J5VB	Ceramic	91 pF
C27	YW5CH470J5VB	Ceramic	47 pF
C29	YW5CH120J5VB	Ceramic	12 pF
C36,37	ECST1AX106ZR	Tantalum	10 µF 10V
C39-43	YWE212F105ZT	Ceramic	1 µF
C44	ECST1AX106ZR	Tantalum	10 µF 10V
C45	YWE212F105ZT	Ceramic	1 µF
C46	TAJA105M016	Electrolytic	1 µF 16V
C47	ECST1AY225ZR	Electrolytic	2.2 µF 10V
C48,49	ECST1AX106ZR	Tantalum	10 µF 10V
C51	ECST1AX335ZR	Tantalum	3.3 µF 10V
C52-54	ECST1AX106ZR	Tantalum	10 µF 10V
C61	ECST1AX106ZR	Tantalum	10 µF 10V
C62	YW5X102K5VB	Ceramic	1000 pF
C63	YW5CH470J5VB	Ceramic	47 pF
C64	YW5F104Z2VB	Ceramic	0.1µ F
C65	ECST1AX106ZR	Tantalum	10 µF 10V
C66,67	YW5F104Z2VB	Ceramic	0.1 µF
C68,69	YWE212F105ZB	Ceramic	1 µF
C70	YW5X103K5VB	Ceramic	0.01 µF
C71	YW5CH470J5VB	Ceramic	47 pF
Z3	MNR78W1LJ102	Block Resistor	
L1	EIC4EJ012E	Coil	
L2,6	ELJFC8R2MF	Coil	8.2 µH
L10,17	ELJFC8R2MF	Coil	8.2 µH
L18	ELJFB101KB	Coil	100 µH
X1	EF0V8004E0A	Crystal Oscillator	
X2	YWDX14R187	Crystal Oscillator	
X3	YWDX17R734	Crystal Oscillator	
CN1,2	YW51763136	26-pin Connector	
TP1,2	YWRCT2125TPV	Test- Pin	

REF.NO.	PART NO.	DESCRIPTION
ACCESSORY PARTS/PACKAGING PARTS		
CN110	YFE4191J100	ALC Connector
M51	YWV8QA3356AN	Operating Instructions
M52	YWT050803	Polyethylene Bag
M53	YWT20X35C03	Polyethylene Bag
M55	YWV9CA2348AN	Packaging Assy
M57	YWV7SA1450A4	Label
EXTENTION BOARD		
EXB01	YWV0EA0326AN	Drive/Digital Extention Board

ORDER NO.AVS9409915C8

Service Manual

Colour CCTV Cameras

WV-CP410/WV-CP412 WV-CP414

Supplement-1

Please file and use this supplement service manual together with the service manual for the Model NO.WV-CP410/CP412/CP414, order No. AVS9408897C8.

LIST OF MODIFICATION

■ DRIVE BOARD

- The value of R257 and R258 have been changed to improve the chroma gain from serial NO. 48A000001 and higher.
- R157, R158, R159, R226, R227, R241, and R242 have been deleted and R260, R261, R262, C136, L20 and L21 have been added to prevent the radio frequency noise serial NO. 49A000001 and higher.

■ DIGITAL BOARD

- The value of R49, C15 and C17 have been changed to stabilize the Line-lock from serial NO. 48A000001 and higher.
- The value of R10, R146 and C40 have been changed to stabilize the Line-lock from serial NO.49A000001 and higher.
- R147, R149, R150, D12 and IC12 have been added to stabilize the Line-lock from serial NO. 49A000001 and higher.

Panasonic

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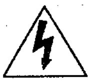
⚠ WARNING

This service literature is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service literature by anyone else could result in serious injury or death.

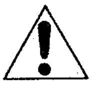
CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION:
TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE.
REFER SERVICEING TO QUALIFIED SERVICE PERSONNEL



This symbol warns the user that uninsuland voltage within the unit may have suificient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any inside part of this unit.



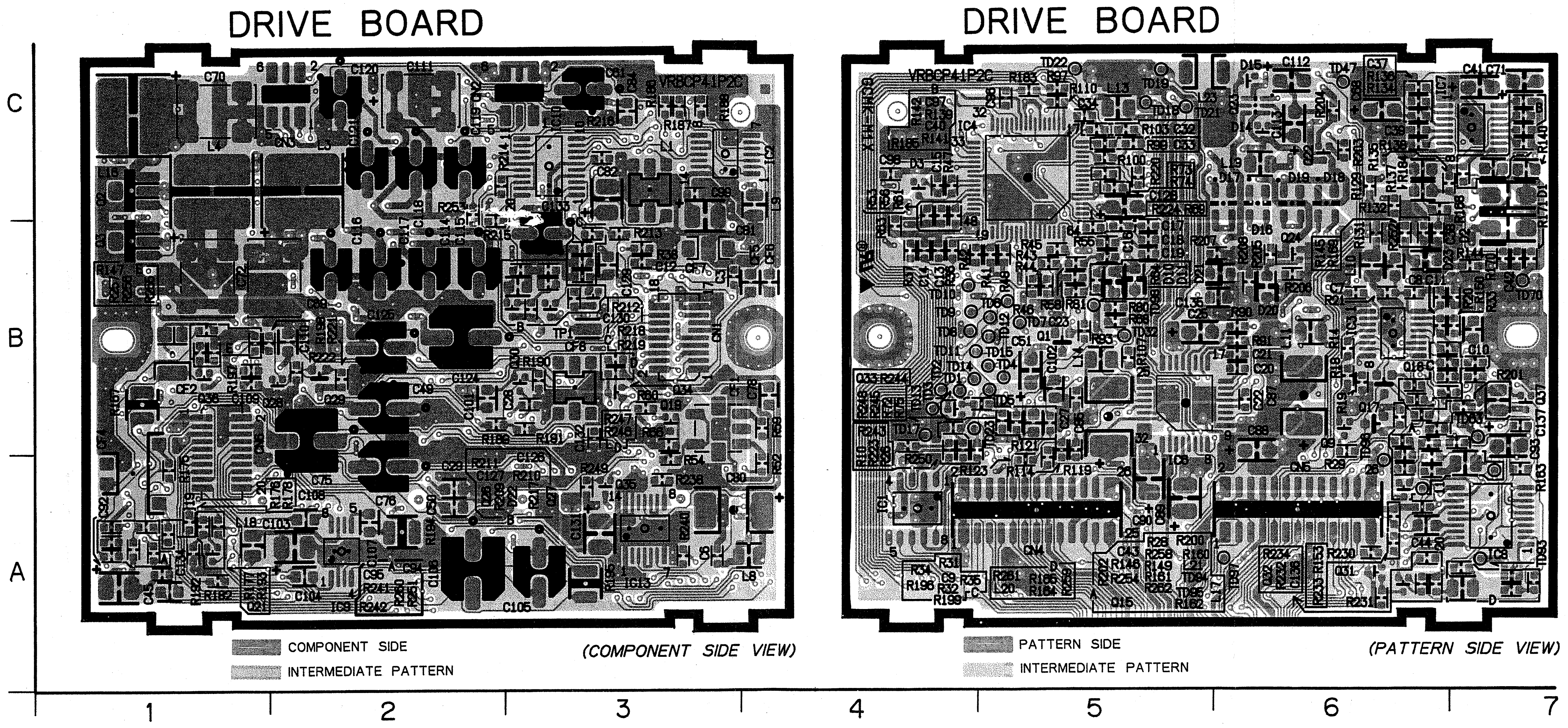
This symbol alerts the user that impotant literature concerning the operation and maintenance of this has been included.
Therefore, it should be read carefully in order to avoid any problems.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are indicated by the " ⚠ " mark on the schematic diagram and the replacement parts list It is essential that these critical parts should be repleced with manufacture's specilied parts to prevent shock, fire, or other hazards
Do not modify the original design without permission of manufacture

Suppl 1

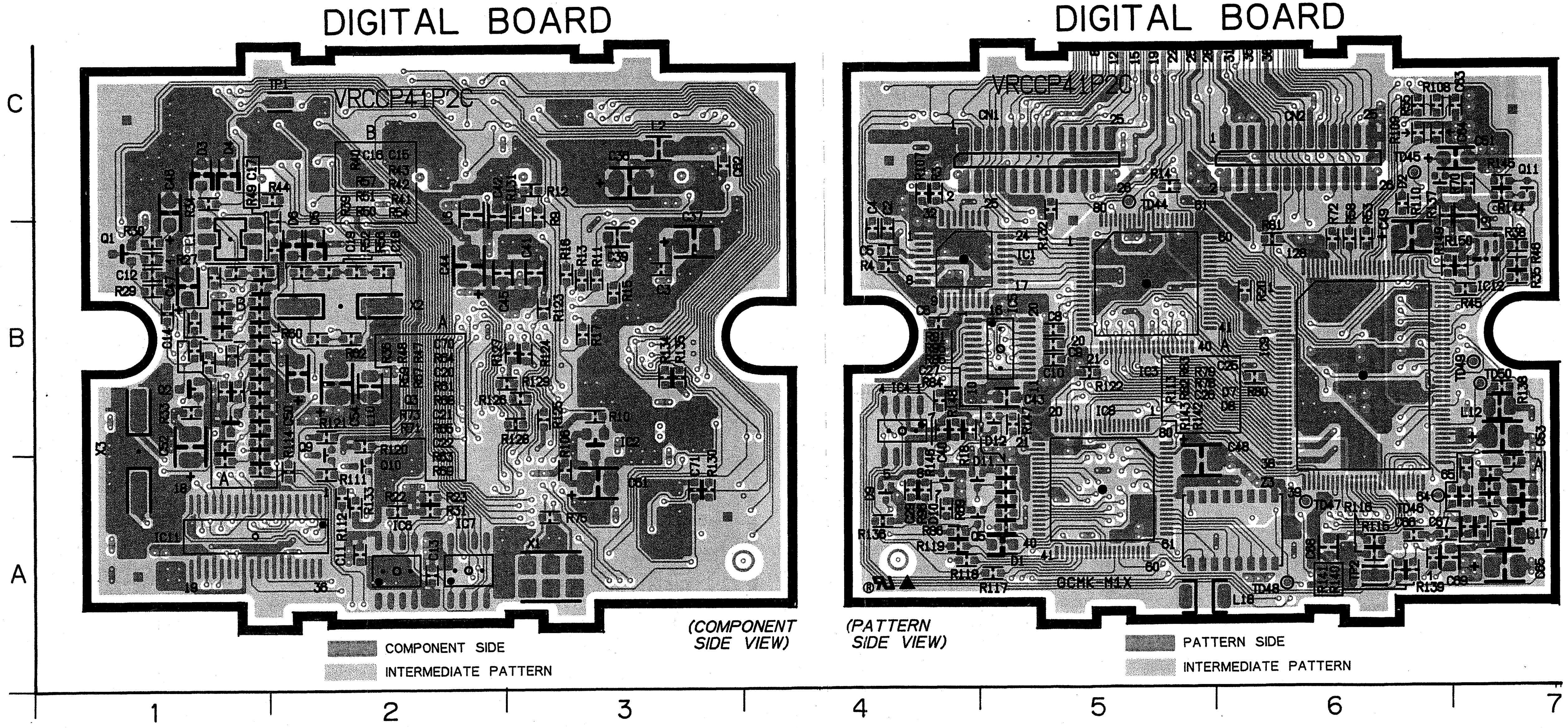
CONDUCTOR VIEW OF DRIVE BOARD (EFFECTIVE FROM SERIAL NO.49A000001)


DRIVE BOARD
DRIVE BOARD
C
B
A
1
2
3
4
5
6
7
VRBCP41P2C
VRBCP41P2C
COMPONENT SIDE
INTERMEDIATE PATTERN
PATTERN SIDE
INTERMEDIATE PATTERN

(COMPONENT SIDE VIEW)

(PATTERN SIDE VIEW)

CONDUCTOR VIEW OF DIGITAL BOARD (EFFECTIVE FROM SERIAL NO.49A000001)


DIGITAL BOARD
DIGITAL BOARD
VRCCP41P2C
VRCCP41P2C
GCMK-M1X
CN1
CN2
IC1
IC3
IC4
IC6
IC7
IC8
IC11
IC12
X1
X2
X3
Q1
Q11
TP1
L12
L18
(COMPONENT SIDE VIEW)
(PATTERN SIDE VIEW)
▨ COMPONENT SIDE
▨ INTERMEDIATE PATTERN
▨ PATTERN SIDE
▨ INTERMEDIATE PATTERN
C
B
A
1
2
3
4
5
6
7

DRIVE BOARD

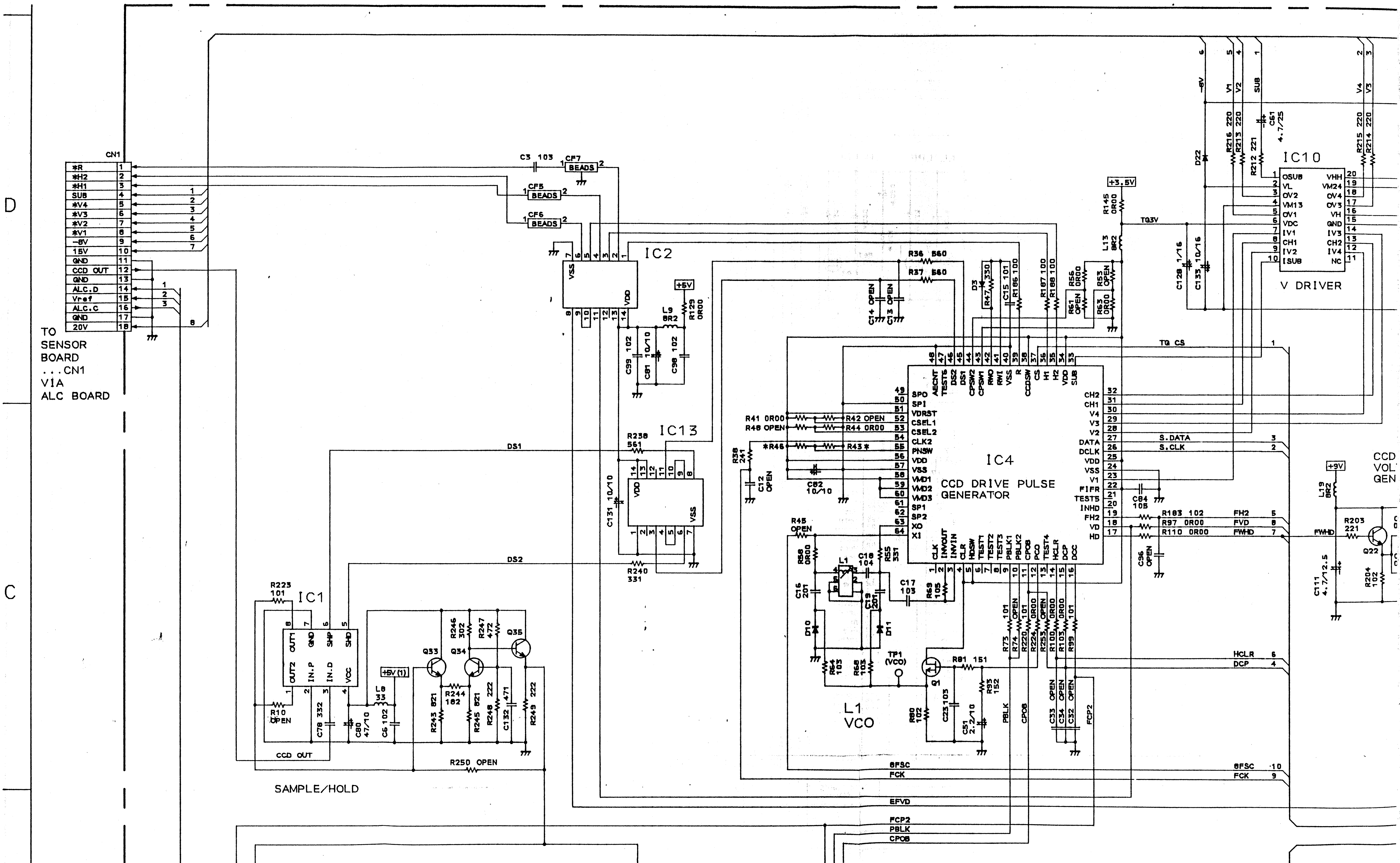
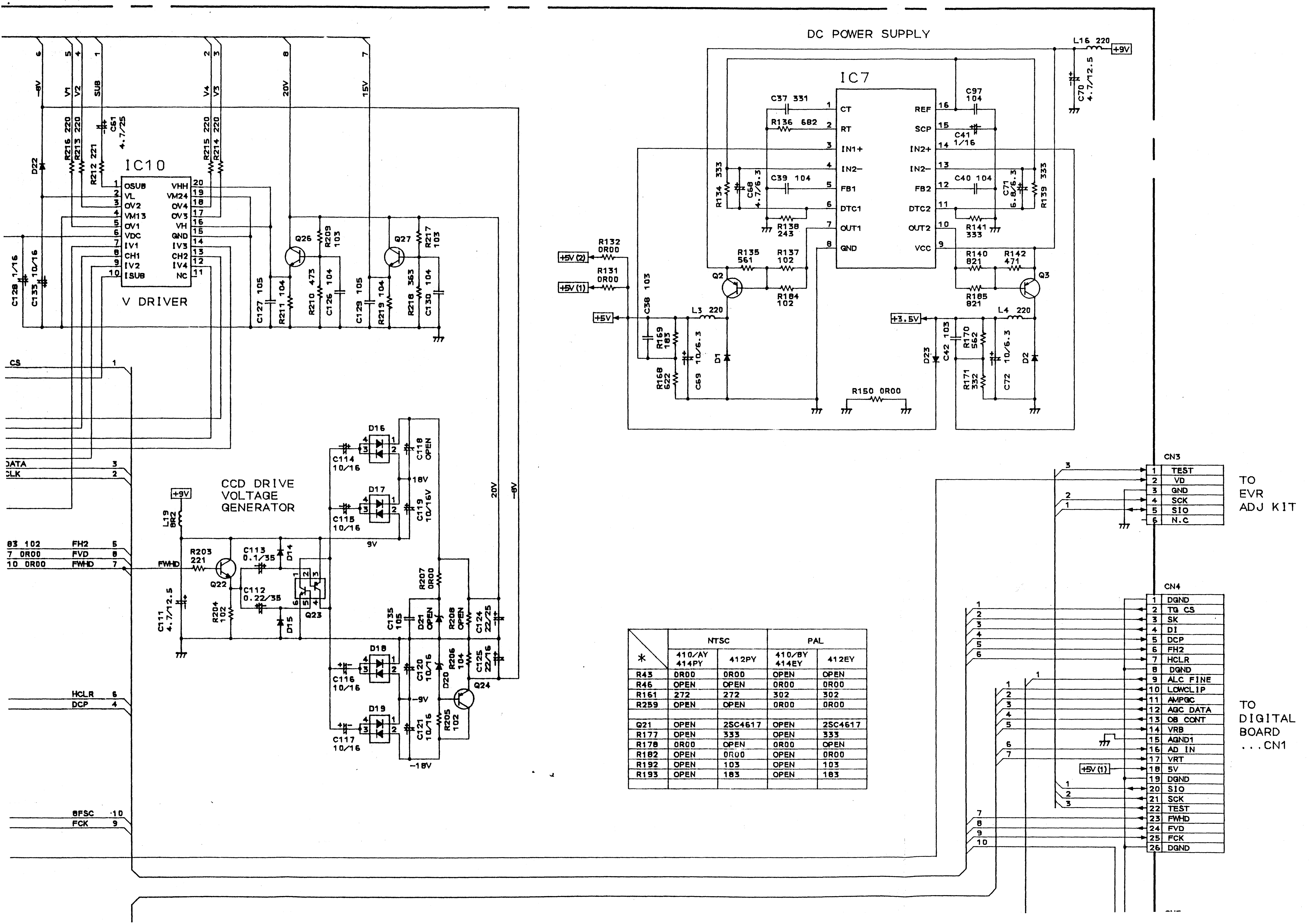
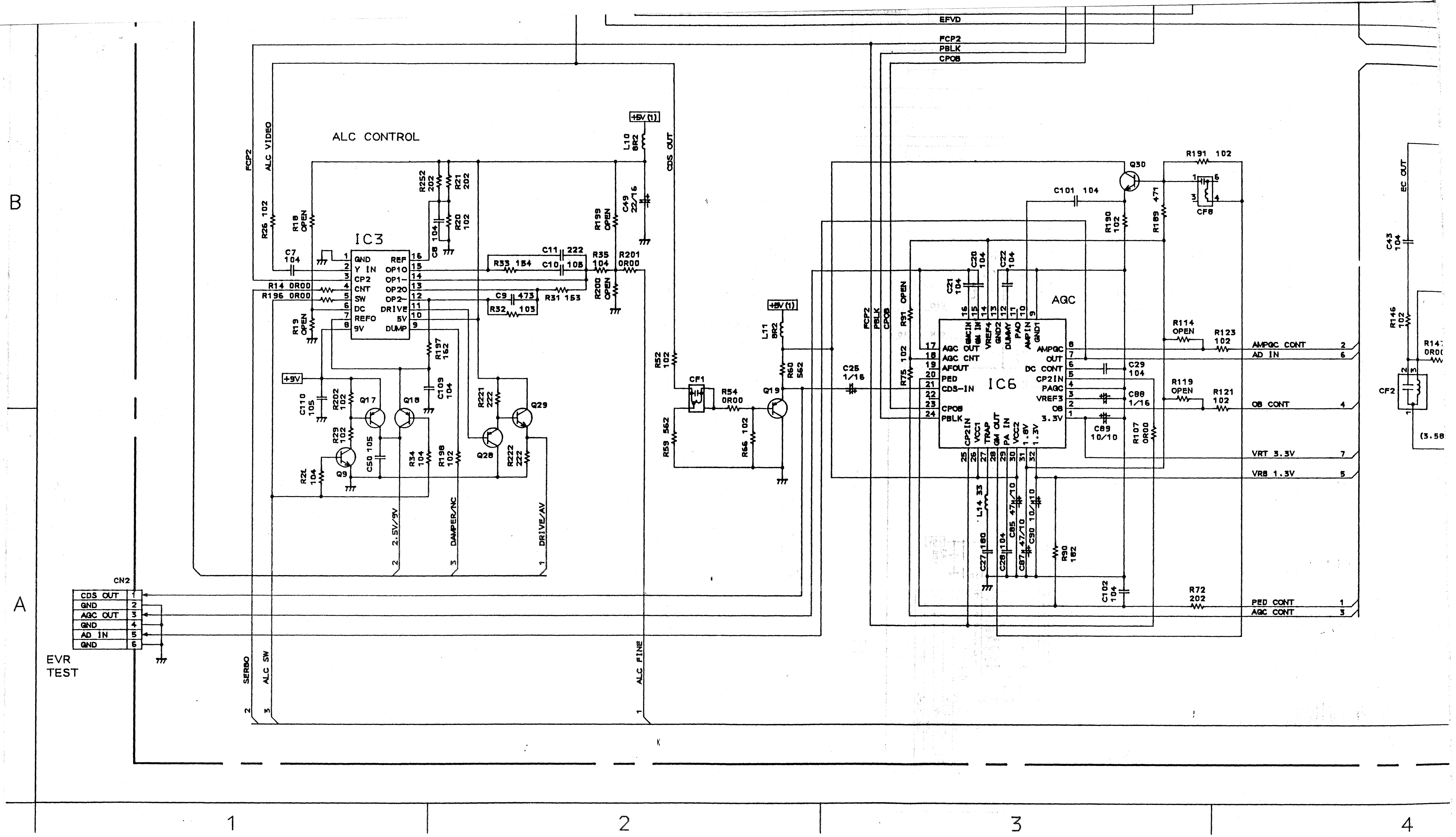
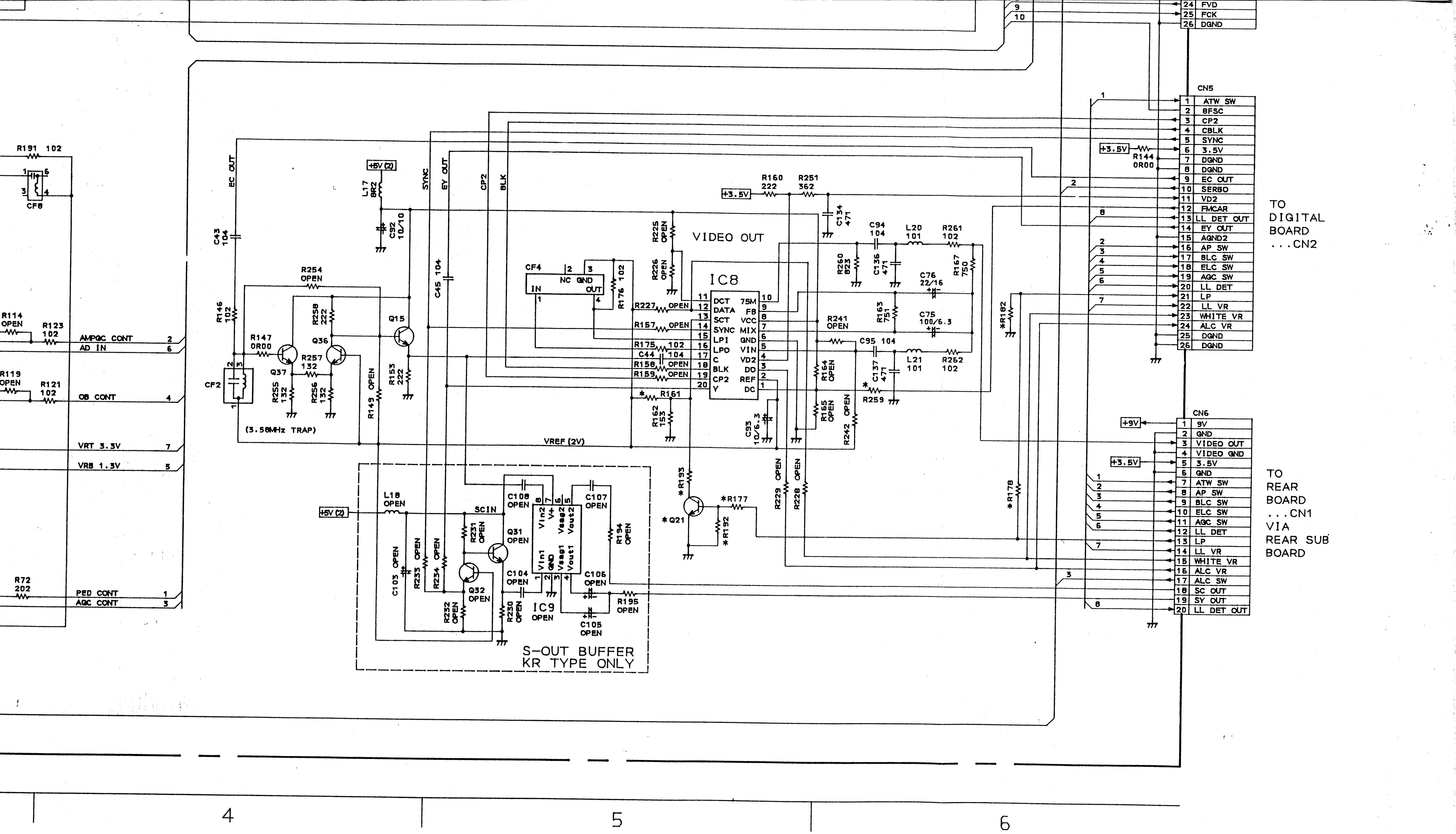

D
C
CN1
*R
*H2
*H1
SUB
*V4
*V3
*V2
*V1
-8V
15V
GND
CCD OUT
GND
ALC.D
Vref
ALC.C
GND
20V
TO SENSOR BOARD ...CN1
V1A ALC BOARD
C3 103
CF7 BEADS
CF5 BEADS
CF6 BEADS
IC2
VSS
VDD
+5V
L9 8R2
R129 0R00
C99 102
C81 10/10
C98 102
IC13
R238 561
C131 10/10
R240 331
DS1
DS2
R223 101
IC1
OUT1
GND
SHP
SHD
OUT2
IN.P
IN.D
VCC
R10 OPEN
C78 332
C80 47/10
L8 33
C6 102
+5V (1)
Q33
Q34
Q35
R246 302
R247 472
R244 182
R243 821
R245 821
R248 222
C132 471
R249 222
CCD OUT
R250 OPEN
SAMPLE/HOLD
R36 560
R37 560
C14 OPEN
C13 OPEN
D3
R47 330
C15 101
R186 100
R187 100
R188 100
R56 0R00
R53 OPEN
R61 OPEN
R63 0R00
+3.5V
R145 0R00
L13 8R2
TG3V
C128 1/16
C133 10/16
TG CS
IC4
CCD DRIVE PULSE GENERATOR
AECNT
TEST6
DS2
DS1
CPSW2
CPSW1
RWO
RWI
VSS
R
CCDSW
CS
H1
H2
VDD
SUB
SPO
SPI
VDRST
CSEL1
CSEL2
CLK2
PNSW
VDD
VSS
VMD1
VMD2
VMD3
SP1
SP2
XO
XI
CH2
CH1
V4
V3
V2
DATA
DCLK
VDD
VSS
V1
F1FR
TEST5
INHD
FH2
VD
HD
CLK
INVOUT
INVIN
CLR
HDSW
TEST1
TEST2
TEST3
PBLK1
PBLK2
CPOB
PCO
TEST4
HCLR
DCP
DCC
R41 0R00
R48 OPEN
R42 OPEN
R44 0R00
*R46
R43 *
R38 241
C12 OPEN
C82 10/10
C84 105
S.DATA
S.CLK
R183 102
R97 0R00
R110 0R00
FH2
FVD
FWHD
C36 OPEN
R45 OPEN
R58 0R00
L1
C18 104
R55 331
C16 201
C19 201
C17 103
R69 105
D10
D11
R64 103
R68 103
TP1 (VCO)
Q1
R81 151
R93 152
R80 102
C23 103
C51 2.2/10
L1 VCO
R73 101
R74 OPEN
R220 101
R224 0R00
R253 OPEN
R100 0R00
R103 0R00
R99 101
PBLK
CPOB
C33 OPEN
C34 OPEN
C32 OPEN
FCP2
HCLR
DCP
8FSC
FCK
EFVD
FCP2
PBLK
CPOB
-8V
V1
V2
SUB
V4
V3
D22
R216 220
R213 220
R212 221
C61 4.7/25
R215 220
R214 220
IC10
OSUB
VL
OV2
VM13
OV1
VDC
IV1
CH1
IV2
ISUB
VHH
VM24
OV4
OV3
VH
GND
IV3
CH2
IV4
NC
V DRIVER
+9V
L19 8R2
CCD VOL GEN
R203 221
FWHD
Q22
C111 4.7/12.5
R204 102

DIAGRAM OF DRIVE BOARD

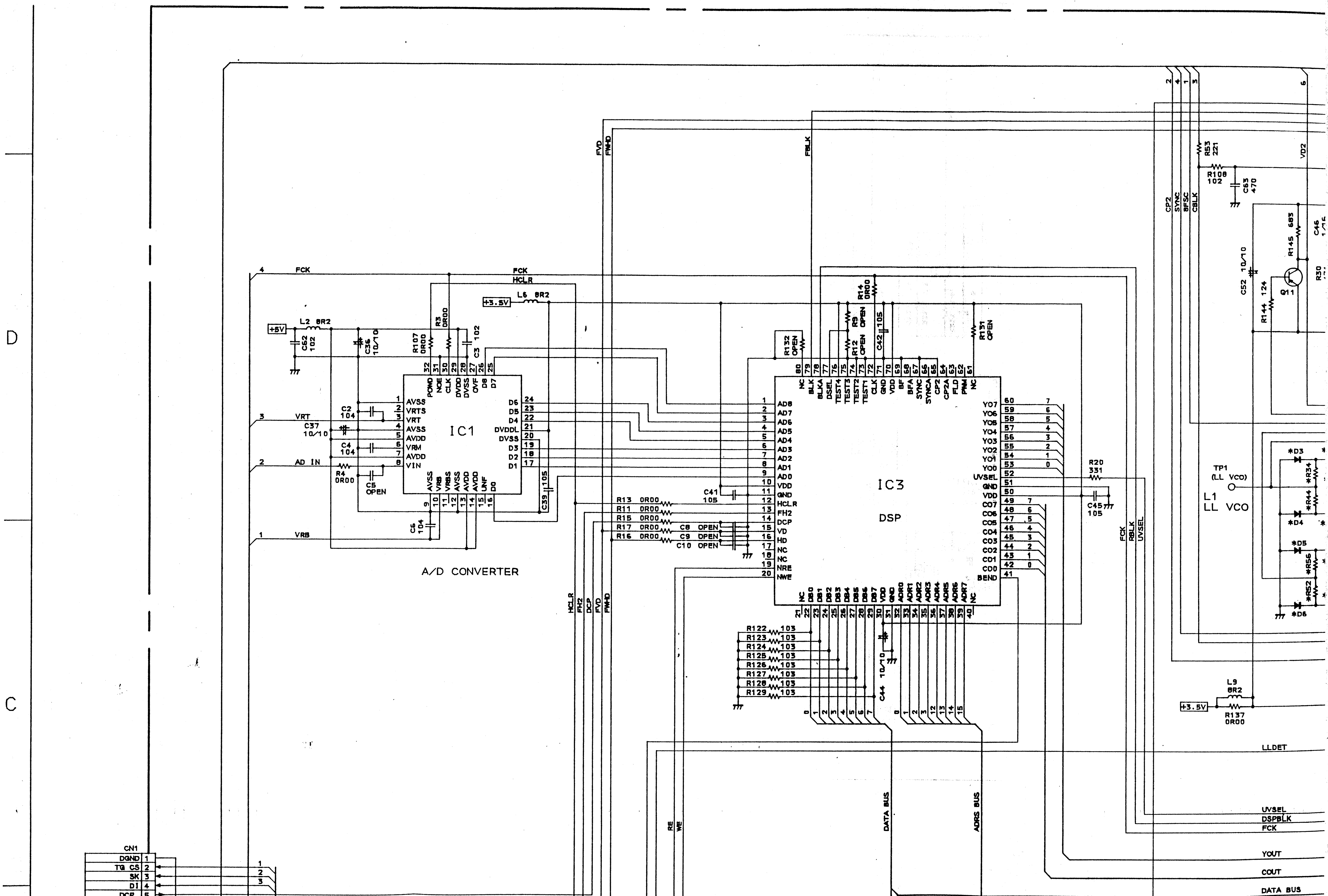

DC POWER SUPPLY
IC7
CT
RT
IN1+
IN2−
FB1
DTC1
OUT1
GND
REF
SCP
IN2+
IN2−
FB2
DTC2
OUT2
VCC
C37 331
R136 682
C39 104
C97 104
C41 1/16
C40 104
R134 333
C68 4.7/6.3
R138 243
C71 6.8/6.3
R139 333
R141 333
R135 561
R137 102
R184 102
R140 821
R142 471
R185 821
R132 0R00
R131 0R00
+5V (2)
+5V (1)
+5V
+3.5V
+9V
L16 220
C70 4.7/12.5
C38 103
R169 183
R168 622
C69 10/6.3
L3 220
D1
Q2
Q3
L4 220
D23
C42 103
R170 562
R171 332
C72 10/6.3
D2
R150 0R00
IC10
V DRIVER
OSUB
VL
OV2
VM13
OV1
VDC
IV1
CH1
IV2
ISUB
VHH
VM24
OV4
OV3
VH
GND
IV3
CH2
IV4
NC
-8V
V1
V2
SUB
V4
V3
20V
15V
R216 220
R213 220
R212 221
C61 4.7/25
R215 220
R214 220
D22
C128 1/16
C133 10/16
Q26
R209 103
Q27
R217 103
C127 105
R211 104
R210 473
C126 104
C129 105
R219 104
R218 363
C130 104
CS
DATA
CLK
CCD DRIVE
VOLTAGE
GENERATOR
+9V
L19 8R2
83 102
7 0R00
10 0R00
FH2
FVD
FWHD
R203 221
Q22
C113 0.1/35
D14
C112 0.22/35
Q23
D15
R204 102
C111 4.7/12.5
D16
C114 10/16
C118 OPEN
18V
D17
C115 10/16
C119 10/16V
9V
20V
-8V
R207 0R00
C135 105
D21 OPEN
R208 OPEN
C124 22/25
D18
C116 10/16
C120 10/16
D20
R206 104
C125 22/16
Q24
-9V
D19
C117 10/16
C121 10/16
R205 102
-18V
HCLR
DCP
8FSC
FCK
CN3
TEST
VD
GND
SCK
SIO
N.C
TO
EVR
ADJ KIT
CN4
DGND
TG CS
SK
DI
DCP
FH2
HCLR
DGND
ALC FINE
LOWCLIP
AMPGC
AGC DATA
DB CONT
VRB
AGND1
AD IN
VRT
5V
DGND
SIO
SCK
TEST
FWHD
FVD
FCK
DGND
+5V (1)
TO
DIGITAL
BOARD
...CN1

*	NTSC		PAL	
	410/AY 414PY	412PY	410/BY 414EY	412EY
R43	0R00	0R00	OPEN	OPEN
R46	OPEN	OPEN	0R00	0R00
R161	272	272	302	302
R259	OPEN	OPEN	0R00	0R00
Q21	OPEN	2SC4617	OPEN	2SC4617
R177	OPEN	333	OPEN	333
R178	0R00	OPEN	0R00	OPEN
R182	OPEN	0R00	OPEN	0R00
R192	OPEN	103	OPEN	103
R193	OPEN	183	OPEN	183

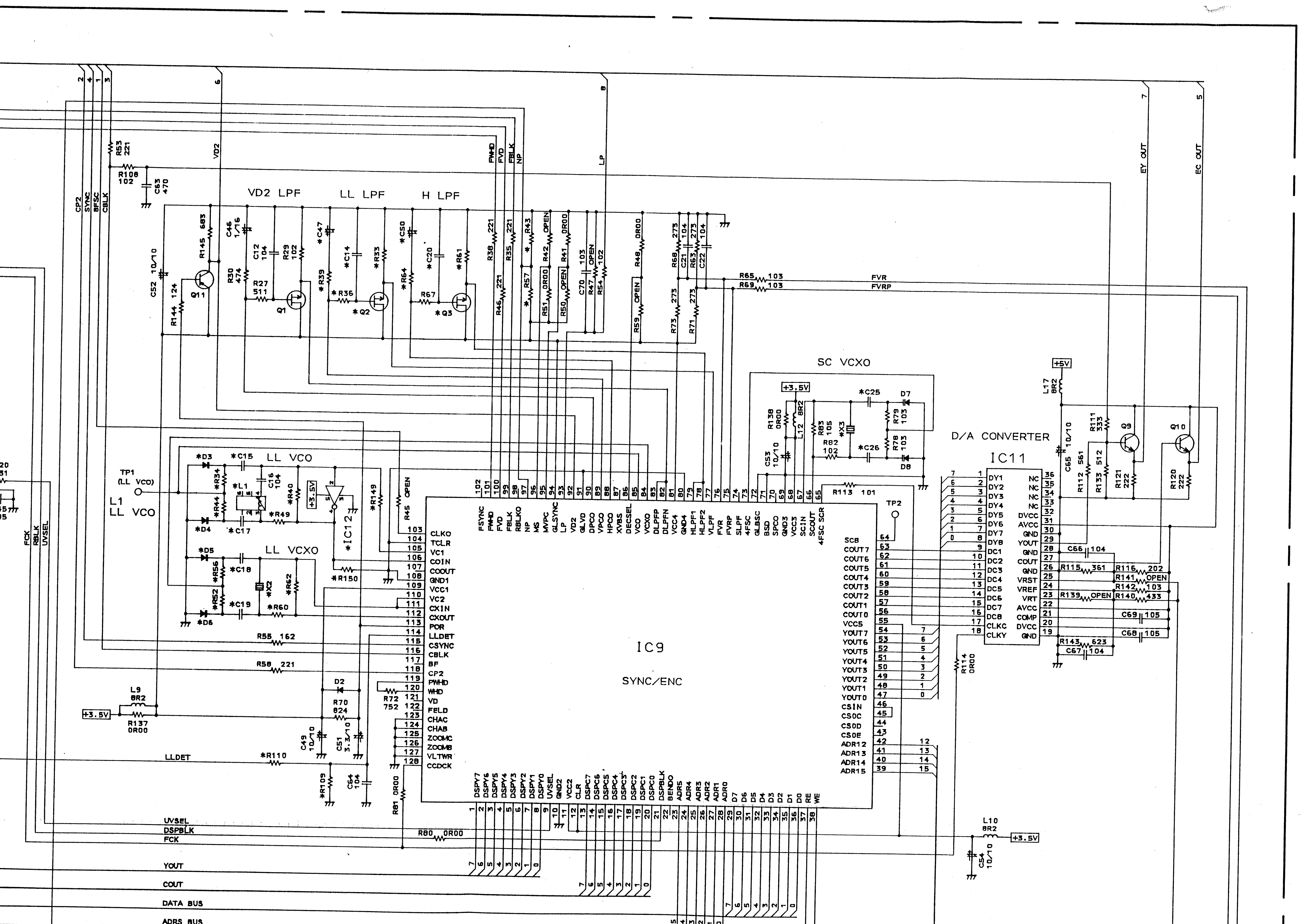

ALC CONTROL
IC3
AGC
IC6
GND
Y IN
CP2
CNT
SW
DC
REFO
9V
REF
OP1O
OP1-
OP2O
OP2-
DRIVE
5V
DUMP
AGC OUT
AGC CNT
AFOUT
PED
CDS-IN
CPOB
PBLK
AMPGC OUT
DC CONT
CP2IN
PAGC
VREF3
OB
3.3V
CP2IN
VCC1
TRAP
GM OUT
PA IN
VCC2
1.8V
1.3V
GMCIN
GM IN
VREF4
GND2
DUMMY
PAO
AMPIN
GND1
CN2
CDS OUT
GND
AGC OUT
GND
AD IN
GND
EVR TEST
EFVD
FCP2
PBLK
CPOB
ALC VIDEO
CDS OUT
EC OUT
SERBO
ALC SW
ALC FINE
2.5V/9V
DAMPER/NC
DRIVE/AV
+5V (1)
+9V
AMPGC CONT
AD IN
OB CONT
VRT 3.3V
VRB 1.3V
PED CONT
AGC CONT
R26 102
R18 OPEN
R19 OPEN
C7 104
R14 0R00
R196 0R00
R252 202
R21 202
R20 102
C8 104
R33 154
C11 222
C10 105
C9 473
R32 103
R31 153
R35 104
R201 0R00
R199 OPEN
R200 OPEN
C49 22/16
L10 8R2
R197 152
C109 104
C110 105
R202 102
Q17
Q18
R29 102
Q9
R2L 104
C50 105
R34 104
R198 102
R221 222
Q28
Q29
R222 222
R52 102
CF1
R54 0R00
R59 562
R66 102
Q19
L11 8R2
R60 562
C25 1/16
R91 OPEN
R75 102
C21 104
C20 104
C22 104
C101 104
Q30
R190 102
R189 471
R191 102
CF8
R114 OPEN
R123 102
C29 104
R119 OPEN
R121 102
C88 1/16
C89 10/10
R107 0R00
L14 33
C85 47/10
C90 10/10
C27 180
C28 104
C87 47/10
R90 182
C102 104
R72 202
C43 104
R146 102
R147 0R0
CF2
(3.58
1
2
3
4
A
B

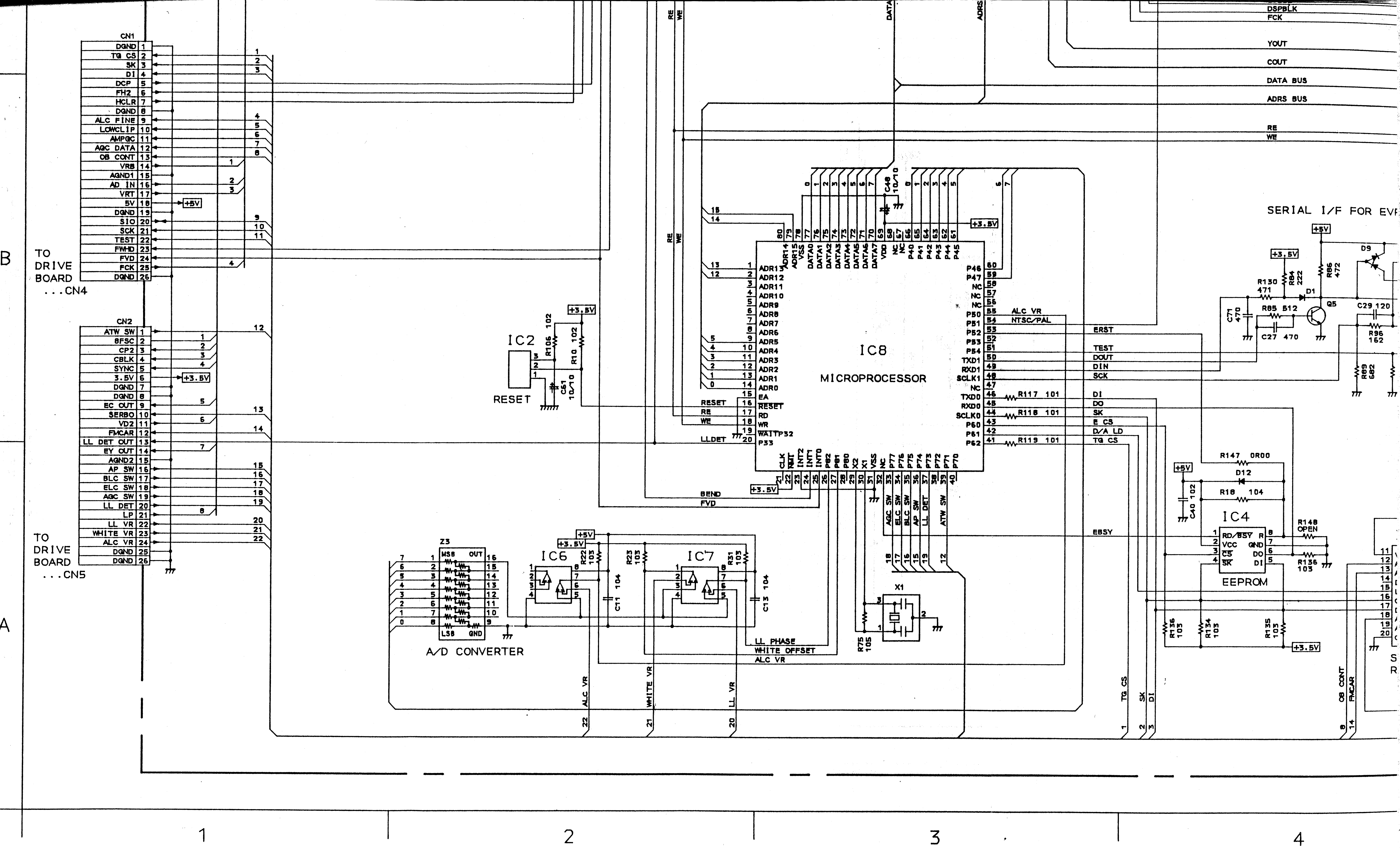

24 FVD
25 FCK
26 DGND
9
10
CN5
1 ATW SW
2 8FSC
3 CP2
4 CBLK
5 SYNC
6 3.5V
7 DGND
8 DGND
9 EC OUT
10 SERBO
11 VD2
12 FMCAR
13 LL DET OUT
14 EY OUT
15 AGND2
16 AP SW
17 BLC SW
18 ELC SW
19 AGC SW
20 LL DET
21 LP
22 LL VR
23 WHITE VR
24 ALC VR
25 DGND
26 DGND
TO DIGITAL BOARD ...CN2
+3.5V
R144 0R00
CN6
1 9V
2 GND
3 VIDEO OUT
4 VIDEO GND
5 3.5V
6 GND
7 ATW SW
8 AP SW
9 BLC SW
10 ELC SW
11 AGC SW
12 LL DET
13 LP
14 LL VR
15 WHITE VR
16 ALC VR
17 ALC SW
18 SC OUT
19 SY OUT
20 LL DET OUT
TO REAR BOARD ...CN1 VIA REAR SUB BOARD
+9V
+3.5V
R191 102
CF8
EC OUT
C43 104
+5V (2)
L17 8R2
C92 10/10
SYNC
EY OUT
CP2
BLK
C45 104
R160 222
R251 362
+3.5V
C134 471
R225 OPEN
R226 OPEN
VIDEO OUT
IC8
11 DCT
12 DATA
13 SCT
14 SYNC
15 LPI
16 LPO
17 C
18 BLK
19 CP2
20 Y
10 75M
9 FB
8 VCC
7 MIX
6 GND
5 VIN
4 VD2
3 DO
2 REF
1 DC
C94 104
L20 101
R261 102
R260 823
C136 471
C76 22/16
R167 750
R163 751
C75 100/6.3
R241 OPEN
C95 104
C137 471
L21 101
R262 102
*R259
CF4
IN
NC GND
OUT
R176 102
R227 OPEN
R157 OPEN
R175 102
C44 104
R158 OPEN
R159 OPEN
*R161
R162 153
C93 10/6.3
R164 OPEN
R165 OPEN
R242 OPEN
*R182
*R178
R254 OPEN
R258 222
Q36
Q15
R146 102
R147 0R00
Q37
R257 132
R255 132
R256 132
R153 222
R149 OPEN
CF2
(3.58MHz TRAP)
VREF (2V)
R114 OPEN
R123 102
AMPGC CONT
AD IN
R119 OPEN
R121 102
OB CONT
VRT 3.3V
VRB 1.3V
R72 202
PED CONT
AGC CONT
*R193
*Q21
*R177
*R192
R229 OPEN
R228 OPEN
+5V (2)
L18 OPEN
SCIN
C108 OPEN
C107 OPEN
R231 OPEN
Q31 OPEN
Vin2 V+ Vsag2 Vout2
Vin1 GND Vsag1 Vout1
R194 OPEN
C103 OPEN
R233 OPEN
R234 OPEN
Q32 OPEN
C104 OPEN
C106 OPEN
R232 OPEN
R230 OPEN
IC9 OPEN
R195 OPEN
C105 OPEN
S-OUT BUFFER KR TYPE ONLY
4
5
6

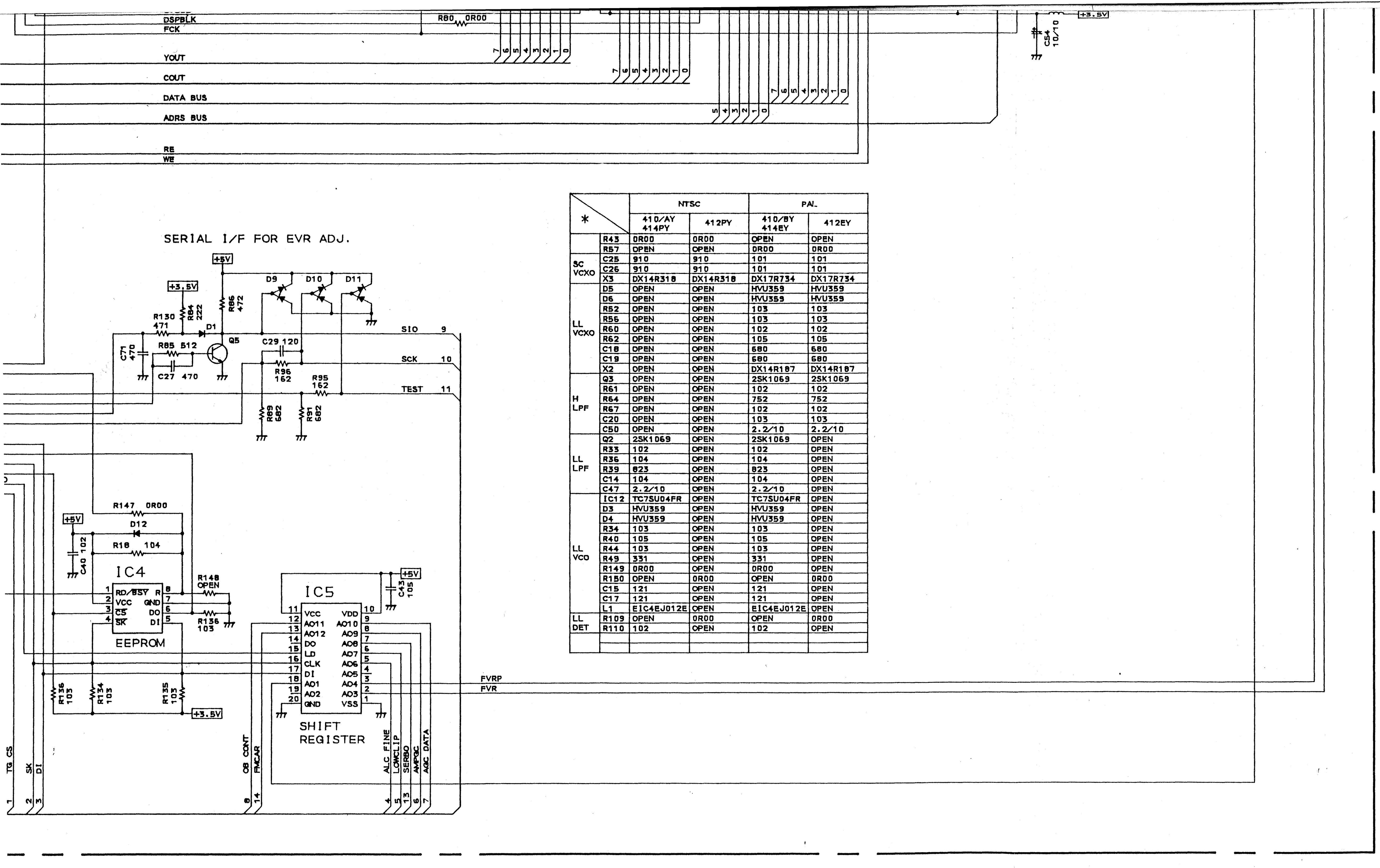
DIGITAL BOARD


D
C
IC1
A/D CONVERTER
IC3
DSP
+5V
+3.5V
L2 8R2
L6 8R2
L9 8R2
C62 102
C36 10/10
R107 0R00
R3 0R00
C3 102
C2 104
C37 10/10
C4 104
R4 0R00
C5 OPEN
C6 104
C39 105
C41 105
C42 105
C44 10/10
C45 105
C52 10/10
C53 470
C8 OPEN
C9 OPEN
C10 OPEN
R13 0R00
R11 0R00
R15 0R00
R17 0R00
R16 0R00
R14 0R00
R9 OPEN
R12 OPEN
R132 OPEN
R151 OPEN
R20 331
R53 221
R108 102
R145 683
R144 124
R137 0R00
R122 103
R123 103
R124 103
R125 103
R126 103
R127 103
R128 103
R129 103
Q11
TP1 (LL VCO)
L1 LL VCO
*D3
*D4
*D5
*D6
*R34
*R44
*R56
*R52
FCK
HCLR
VRT
AD IN
VRB
FVD
FWHD
FBLK
HCLR
FH2
DCP
FVD
FWHD
CP2
SYNC
BFSC
CBLK
VD2
RBLK
UVSEL
RE
WE
DATA BUS
ADRS BUS
LLDET
UVSEL
DSPBLK
FCK
YOUT
COUT
DATA BUS
CN1
DGND
TG CS
SK
DI
DCR
AVSS
VRTS
VRT
AVSS
AVDD
VRM
AVDD
VIN
PDWD
NOE
CLK
DVDD
DVSS
OVF
D8
D7
D6
D5
D4
DVDDL
DVSS
D3
D2
D1
AVSS
VRB
VRBS
AVSS
AVDD
AVDD
UNF
D0
AD8
AD7
AD6
AD5
AD4
AD3
AD2
AD1
AD0
VDD
GND
HCLR
FH2
DCP
VD
HD
NC
NC
NRE
NWE
NC
BLK
BLKA
DSEL
TEST4
TEST3
TEST2
TEST1
CLK
GND
VDD
BF
BFA
SYNCA
CP2
CP2A
FLD
PNM
NC
YO7
YO6
YO5
YO4
YO3
YO2
YO1
YO0
UVSEL
GND
VDD
CO7
CO6
CO5
CO4
CO3
CO2
CO1
CO0
BEND
NC
DB0
DB1
DB2
DB3
DB4
DB5
DB6
DB7
VDD
GND
ADR0
ADR1
ADR2
ADR3
ADR4
ADR5
ADR6
ADR7
NC

ATIC DIAGRAM OF DIGITAL BOARD


VD2 LPF
LL LPF
H LPF
SC VCXO
D/A CONVERTER
IC11
IC9
SYNC/ENC
LL VCO
LL VCXO
TP1 (LL VCO)
L1 LL VCO
*IC12
TP2
EY OUT
EC OUT
FVR
FVRP
+3.5V
+5V
CP2
SYNC
BFSC
CBLK
VD2
FWHD
FVD
FBLK
NP
LP
FCK
RBLK
UVSEL
LLDET
UVSEL
DSPBLK
FCK
YOUT
COUT
DATA BUS
ADRS BUS
Q11
Q1
*Q2
*Q3
Q9
Q10
L9 8R2
R137 0R00
L10 8R2
L17 8R2
R80 0R00
R55 162
R58 221
R65 103
R69 103
R113 101
CLKO
TCLR
VC1
COIN
COOUT
GND1
VCC1
VC2
CXIN
CXOUT
POR
LLDET
CSYNC
CBLK
BF
CP2
PWHD
WHD
VD
FELD
CHAC
CHAB
ZOOMC
ZOOMB
VLTWR
CCDCK
SCB
COUT7
COUT6
COUT5
COUT4
COUT3
COUT2
COUT1
COUT0
VCC5
YOUT7
YOUT6
YOUT5
YOUT4
YOUT3
YOUT2
YOUT1
YOUT0
CSIN
CS0C
CS0D
CS0E
ADR12
ADR13
ADR14
ADR15
DY1
DY2
DY3
DY4
DY5
DY6
DY7
DY8
DC1
DC2
DC3
DC4
DC5
DC6
DC7
DC8
CLKC
CLKY
NC
DVCC
AVCC
GND
YOUT
COUT
VRST
VREF
VRT
COMP


CN1
DGND
TG CS
SK
DI
DCP
FH2
HCLR
DGND
ALC FINE
LOWCLIP
AMPGC
AGC DATA
OB CONT
VRB
AGND1
AD IN
VRT
5V
DGND
SIO
SCK
TEST
FWHD
FVD
FCK
DGND
+5V
TO DRIVE BOARD ...CN4
CN2
ATW SW
BFSC
CP2
CBLK
SYNC
3.5V
DGND
DGND
EC OUT
SERBO
VD2
FMCAR
LL DET OUT
EY OUT
AGND2
AP SW
BLC SW
ELC SW
AGC SW
LL DET
LP
LL VR
WHITE VR
ALC VR
DGND
DGND
+3.5V
TO DRIVE BOARD ...CN5
IC2
RESET
R106 102
R10 102
C61 10/10
IC8
MICROPROCESSOR
ADR13
ADR12
ADR11
ADR10
ADR9
ADR8
ADR7
ADR6
ADR5
ADR4
ADR3
ADR2
ADR1
ADR0
EA
RESET
RD
WR
WAITP32
P33
ADR14
ADR15
VSS
DATA0
DATA1
DATA2
DATA3
DATA4
DATA5
DATA6
DATA7
VDD
NC
P40
P41
P42
P43
P44
P45
P46
P47
P50
P51
P52
P53
P54
TXD1
RXD1
SCLK1
TXD0
RXD0
SCLK0
P60
P61
P62
CLK
NMI
INT2
INT1
INT0
P82
P81
P80
X2
X1
P77
P76
P75
P74
P73
P72
P71
P70
C48 10/10
LLDET
BEND
FVD
RE
WE
DATA
ADRS
DSPBLK
FCK
YOUT
COUT
DATA BUS
ADRS BUS
ALC VR
NTSC/PAL
ERST
TEST
DOUT
DIN
SCK
R117 101
R118 101
R119 101
DI
DO
SK
E CS
D/A LD
TG CS
EBSY
SERIAL I/F FOR EVF
+3.5V
+5V
R130 471
R84 222
R86 472
D9
D1
Q5
R85 512
C71 470
C27 470
C29 120
R96 162
R89 682
R147 0R00
D12
R18 104
C40 102
IC4
RD/BSY
VCC
CS
SK
R
GND
DO
DI
EEPROM
R148 OPEN
R136 103
R134 103
R135 103
Z3
MSB
OUT
LSB
GND
A/D CONVERTER
IC6
IC7
R22 103
R23 103
R31 103
C11 104
C13 104
LL PHASE
WHITE OFFSET
ALC VR
X1
R75 105
AGC SW
ELC SW
BLC SW
AP SW
LL DET
ATW SW
OB CONT
FMCAR
1
2
3
4
B
A


DSPBLK
FCK
R80 0R00
+3.5V
C54 10/10
7 6 5 4 3 2 1 0
YOUT
COUT
DATA BUS
ADRS BUS
5 4 3 2 1 0
RE
WE
SERIAL I/F FOR EVR ADJ.
+5V
D9
D10
D11
+3.5V
R130 471
R84 222
R86 472
D1
Q5
C71 470
R85 512
C27 470
C29 120
R96 162
R95 162
R89 682
R91 682
SIO 9
SCK 10
TEST 11
R147 0R00
+5V
D12
R18 104
C40 102
IC4
RD/BSY
VCC
CS
SK
R
GND
DO
DI
EEPROM
R148 OPEN
R136 103
R134 103
R135 103
+3.5V
IC5
VCC
VDD
AO11
AO10
AO12
AO9
DO
AO8
LD
AO7
CLK
AO6
DI
AO5
AO1
AO4
AO2
AO3
GND
VSS
C43 105
+5V
SHIFT REGISTER
FVRP
FVR
TG CS
SK
DI
OB CONT
FMCAR
ALC FINE
LOWCLIP
SERBO
AMPGC
AGC DATA
1 2 3 8 14 4 5 13 6 7

*		NTSC		PAL	
		410/AY 414PY	412PY	410/BY 414EY	412EY
	R43	0R00	0R00	OPEN	OPEN
	R57	OPEN	OPEN	0R00	0R00
SC VCXO	C25	910	910	101	101
	C26	910	910	101	101
	X3	DX14R318	DX14R318	DX17R734	DX17R734
LL VCXO	D5	OPEN	OPEN	HVU359	HVU359
	D6	OPEN	OPEN	HVU359	HVU359
	R52	OPEN	OPEN	103	103
	R56	OPEN	OPEN	103	103
	R60	OPEN	OPEN	102	102
	R62	OPEN	OPEN	105	105
	C18	OPEN	OPEN	680	680
	C19	OPEN	OPEN	680	680
	X2	OPEN	OPEN	DX14R187	DX14R187
H LPF	Q3	OPEN	OPEN	2SK1069	2SK1069
	R61	OPEN	OPEN	102	102
	R64	OPEN	OPEN	752	752
	R67	OPEN	OPEN	102	102
	C20	OPEN	OPEN	103	103
	C50	OPEN	OPEN	2.2/10	2.2/10
LL LPF	Q2	2SK1069	OPEN	2SK1069	OPEN
	R33	102	OPEN	102	OPEN
	R36	104	OPEN	104	OPEN
	R39	823	OPEN	823	OPEN
	C14	104	OPEN	104	OPEN
	C47	2.2/10	OPEN	2.2/10	OPEN
LL VCO	IC12	TC7SU04FR	OPEN	TC7SU04FR	OPEN
	D3	HVU359	OPEN	HVU359	OPEN
	D4	HVU359	OPEN	HVU359	OPEN
	R34	103	OPEN	103	OPEN
	R40	105	OPEN	105	OPEN
	R44	103	OPEN	103	OPEN
	R49	331	OPEN	331	OPEN
	R149	0R00	OPEN	0R00	OPEN
	R150	OPEN	0R00	OPEN	0R00
	C15	121	OPEN	121	OPEN
	C17	121	OPEN	121	OPEN
	L1	EIC4EJ012E	OPEN	EIC4EJ012E	OPEN
LL DET	R109	OPEN	0R00	OPEN	0R00
	R110	102	OPEN	102	OPEN

4 5 6

REPLACEMENT PARTS LIST

Important Notice

1. Components identified by "⚠" mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
2. RTL : Retention Time Limited

REF. NO.	ORIGINAL PART NO.	NEW PART NO.	DESCRIPTION
DRIVE BOARD (Effective from Serial No. 49A000001)			
R157	ERJ3GEY0R00	—	
R158	ERJ3GEY0R00	—	
R159	ERJ3GEY0R00	—	
R226	ERJ3GEY0R00	—	
R227	ERJ3GEY0R00	—	
R241	ERJ3GEYJ103	—	
R242	ERJ3GEYJ512	—	
R257	ERJ3GEYJ222	ERJ3GEYJ132	Carbon 1.3K ohms 1/16W
R258	ERJ3GEYJ302	ERJ3GEYJ222	Carbon 2.2K ohms 1/16W
R260	—	ERJ3GEYJ823	Carbon 82K ohms 1/16W
R261, 262	—	ERJ3GEYJ102	Carbon 1K ohms 1/16W
C136	—	YW5X471K5VB	Ceramic 470PF
L20, 21	—	ELJSC101KB	Coil 100µH
DIGITAL BOARD (Effective from Serial No. 49A000001)			
IC12	—	YWTC7SU04F	IC (WV-CP410 / 414 only)
D12	—	YWDA121	Diode
R10	ERJ3GEYJ473	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R49	ERJ3GEYJ102	ERJ3GEYJ331	Carbon 330 ohms 1/16W
R146	ERDS2TJ103	ERJ3GEYJ103	(WV-CP410 / 414 only) Carbon 10K ohms 1/16W
R147, 149	—	ERJ3GEY0R00	Carbon 0 ohm 1/16W
R150	—	ERJ3GEY0R00	Carbon 0 ohm 1/16W
C15, 17	YW5CH241J5VB	YW5CH121J5VB	(WV-CP412 only) Ceramic 120PF
C40	YWE212F105ZT	YW5X102K5VB	(WV-CP410 / 414 only) Ceramic 1000PF